BENGALURU DEVELOPMENT AUTHORITY

CONSULTANCY SERVICES FOR AUTHORITY'S ENGINEER FOR SUPERVISION OF CONSTRUCTION OF 3-LANE BI-DIRECTIONAL ROAD UNDERPASS ON BELLARY ROAD BETWEEN HEBBAL JUNCTION AND UNIVERSITY OF AGRICULTURE SCIENCES (UAS) STAFF QUARTERS VIA KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY (KVAFSU) CAMPUS, BENGALURU ON EPC.

REQUEST FOR PROPOSAL (RFP)

Office of the Executive Engineer,
Infrastructure Division,
Bangalore Development Authority (BDA),
Head Office, Kumara Park West, T. Chowdaiah Road, Bengaluru-560020

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REQUEST FOR PROPOSAL (RFP)

SECTION 1: INFORMATION TO CONSULTANTS

Sub: Consultancy services for Authority's Engineer for Supervision of Construction of 3-Lane Bi-Directional Road Underpass on Bellary Road between Hebbal Junction and University of Agriculture Sciences (UAS) Staff Quarters via Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU) Campus, Bengaluru on EPC Basis.

The Bangalore Development Authority (the 'Employer') invites proposals from eligible Consultants for engaging an Authority's Engineer (AE) on the basis of Competitive Bidding for the following contract package in the State of Karnataka.

TABLE1: DETAILS OF PROJECT

SL No	Consultancy Package	NH No.	State	Project Stretch	Project Length (Km) / Project Cost (Cr.)	Assignment period (months)
1			Karnataka	Construction of 3-Lane Bi-Directional Road Underpass on Bellary Road between Hebbal Junction and University of Agriculture Sciences (UAS) Staff Quarters via Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU) Campus, Bengaluru.	RED Tube 2.228 KMS Blue Tube 2.180 KMS	24 Months

1. The RFP has also been uploaded on KPP Portal (https://kppp.karnataka.gov.in/#/portal/portal-home). As such before submitting the proposal the Consultant shall mandatorily register and enlist themselves (the firm and all key personnel), on the KPP Portal and furnish registration details along with its RFP.

2. Bid must be submitted their bid proposals in KPP Portal only (https://kppp.karnataka.gov.in/#/portal/portal-home) on or before time and date mentioned in the portal.

3. Selection of AE shall be as per selection procedures given in the Model Agreement for Engineering Procurement and Construction. The selected AE shall be intimated to the Contractor.

4. The proposal shall be submitted in English Language and all correspondence would be in the same language.

5. Bangalore Development Authority (Name of Employer) intends to appoint a consultant to act as Authority's Engineer for implementation of the EPC project. As per the Terms and Conditions of the EPC Agreement (s), the Authority's Engineer shall perform all the duties as per TOR given in this RFP along with any amendment thereof. The selection of Independent Engineer shall follow the laid down procedures given in the Contract Agreement signed between Employer and Contractor.

6. The interested consultancy firms may download the RFP document at free of cost from KPP Portal.

7. Unqualified / Technically non-qualified bidders would be informed regarding their non qualification in KPP Portal. Prospective Bidders are advised to regularly visit the portal for latest update of the tender.

8. The proposal should be submitted by consultancy firms in two parts. The two parts of the proposal are Part1: Technical Proposal and Part2: Financial Proposal. For a given EPC Project, Stage -1 of the Evaluation shall consider the evaluation of the Technical Proposal (i.e. Part 1). The firms scoring the qualifying marks (minimum 75%) as mentioned in RFP shall only be considered for further evaluation. Under stage 2, the financial proposal of such firms as selected above shall be opened and evaluated. Proposals will finally be ranked according to their combined technical and financial scores as specified in clause 5 of section 2.

9. The total time period for the assignment as Authority's Engineer will be for Construction Period of 24 months + Maintenance Period of 60 Months with reduced man power.

10. **(Deleted)** Consultants may apply either as a sole firm or forming Joint Venture with other consultants. In case of Joint Venture, the maximum number of Joint Venture partners is limited to 2 (i.e. one lead + 1 JV partner). Formulation of more than one JV/association with different partners for the same work is not allowed and all such proposal involving the firms shall be treated as non-responsive. If the Consultant submits bids as sole applicant and also in JV/Association with another consultant, both bids shall be summarily rejected. No Consultant shall submit more than one bid.

11. **(Deleted)** (A) Under JV arrangement, if any Associate is common with 2 or more bidders, all those bids shall be declared non-responsive. Hence, the bidder may ensure on his own that the associate proposed by him is not proposed by any other bidder participating in the same assignment and the bidder is solely responsible in this regard.

    (B) In addition, the applicant whether a sole applicant or lead member with joint venture may also include an Associate for providing key personnel. In such case, the applicant should submit an MOU with associate regarding role and responsibility of Associate Company. However, the maximum no. of key personnel from Associate firm during RFP proposal and implementation of contract should be limited to two (2).

12. The Applicant, by submitting its Application pursuant to this RFP, shall be deemed to have acknowledged that without prejudice to the Bangalore Development Authority any other

right or remedy hereunder or in law or otherwise, the Applicant shall be debarred from participating in the future projects of the Bangalore Development Authority in the following situations and also forfeit their EMD and performance security if contract has been signed.

(a) If an Applicant withdraws its Proposal during the period of its validity as specified in this RFP and as extended by the Applicant from time to time.

(b) In the case of a Selected Applicant, if the Applicant fails to sign the Agreement.

(c) If found that the Selected Applicant has submitted any fake/forged/morphed/ documents misleading the client during the tender process or even after subsequent to contract execution or during contract implementation.

13. Consulting firms meeting the following criteria are only eligible for applying for this assignment. Firms not meeting these criteria, need not apply.

* The construction period to be indicated in the RFP by concerned Technical Division inviting the RFP.

A). Eligibility criteria for sole applicant firm.

S. No.	**Experience of the firm in last 7 years**		**Annual Turnover*** **
	Preparation of DPR Tunnel Project	**Project Supervision/IC Tunnel Project**	
1 (a).	The firm should have minimum experience of preparation of detailed Project Report/ Feasibility Study cum Preliminary Design Report of Tunnel project of aggregate length equal to 1 time or more of similar category for which RFP is invited.	The firm should have minimum experience of Project supervision/Independent Engineer/Consultant of Tunnel Project of aggregate length equal to 1 time or more of similar category** for which RFP is invited.	Annual turnover (updated average of last 7 years) of the firm from consultancy business should be equal to or more than 2% of Estimated Project Cost.

** Similar project means 2/4 lane Road Tunnel Project as applicable for the project for which RFP is invited.

*** In case the project includes any specialized nature of work such as tunnels, specialized structures etc. in substantial quantum, this requirement may be suitably included.

B) **(Deleted)** Eligibility Criteria for partners in case of JV (under JV arrangement maximum 2 JV partners shall be allowed) shall be as under:

The lead partner must fulfill at least 50% of requirements at 1(a) of table in para (A) above and other JV partner should fulfill at least 30% of eligibility criteria as indicated at 1(a) of table in para (A) above. Also, the lead partner and JV partner jointly should meet the eligibility criteria as mentioned at 1(a) of table in para (A) above.

Note: The weightage given for experience of a firm would depend on the role of the firm in the respective assignments. The firm's experience would get full credit if it was the sole firm in the respective assignment. If the applicant firm has completed projects as JV with some other firms, weightage shall be given as per the JV share***. However, if the applicant firm has executed the project as associate with some other firms, 25% weightage shall be given to the applicant firm for the projects completed under such association.

*** For weightage of experience in any past Consultancy assignment, experience certificate from the client shall be submitted. In absence of clear demarcation of JV share in client certificate, the weightage will be treated as 60 % for lead partner and 40% for minor partner. Annual turnover duly certified by Chartered Accountant shall be accepted. In case of non-availability of such documents no weightage of turnover/experience will be considered.

16. The Bidder including individual or any of its Joint Venture Member should, in the last 2 years, have neither failed to perform for the consultancy services pertaining to Expressways, National Highways, ISC (Inter State Connectivity) & EI (Economic Importance) works, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder including individual or any of its Joint Venture Member, as the case may be, nor has been expelled or terminated by Ministry of Road Transport & Highways or its implementing agencies for breach by such Bidder including individual or any of its Joint Venture Member. Consultants (sole firm) who do not fulfil the aforesaid condition as on last date of submission of proposal, need not apply as their RFP proposal will not be entertained.

17. The two parts of the Proposal (Technical proposal and financial proposal) must be submitted KPP Portal only with all pages numbered serially, along with an index of submission as per procedure under KPP Portal. Physical submission of the proposal shall not be accepted. In the event, any of the instructions mentioned herein have not been adhered to, the Employer may reject the Proposal.

SECTION 2:

LETTER OF INVITATION TO CONSULTANTS

1 INTRODUCTION

1.1 Bids are invited from consulting firms either as a sole firm/ joint venture with other Consultant willing to act as AE to submit a proposal for providing consulting services required for the assignment named in the attached Letter of Invitation.

1.2 A brief description of the assignment and its objectives are given in the Terms of Reference (TOR).

1.3 The assignment shall be implemented in Construction Period (24 Months) and Maintenance Period (60 Months).

1.4 This RFP is neither an agreement nor an offer by the Authority to the prospective Applicants or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in the formulation of their Proposals pursuant to this RFP. This RFP includes statements and assumptions, which reflect various assessments arrived at by the Authority in relation to the Consultancy. Such assessments and statements do not purport to contain all the information that each Applicant may require. The information contained in this RFP, may not be complete, accurate, adequate or correct. Each Applicant should, therefore, conduct its own investigations about the assignment and the local conditions before submitting the proposal by paying a visit to the Client and the project site, sending written queries to the client, before the date and time specified in the Data Sheet.

1.5 Please note that (i) the costs of preparing the proposal and negotiating for the contract, including a visit to site, are not reimbursable as a direct cost of assignment and (ii) Employer is not bound to accept any of the proposals received by it and reserves the right to annul the selection process at any time prior to contract award, without thereby incurring any liability to the Consultants.

1.6 Consultant have an obligation to disclose any situation of actual or potential conflict that impacts their capacity to serve the best interest of their client, or than may reasonably be perceived as having this effect. Failure to disclose said situations may lead to the disqualification of the Consultant or the termination of its Contract and/or any other action as deemed fit by the Authority at any stage.

1.7 It is the Bangalore Development Authority policy that the consultants observe the highest standard of ethics during the selection and execution of such contracts. In pursuance of this policy, the Bangalore Development Authority:

(a) Defines, for the purpose of this paragraph, the terms set forth below as follows:

(i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution;

(ii) "fraudulent practice" means a misrepresentation or omission of facts in order to influence a selection process or the execution of a contract;

(iii) "collusive practices" means a scheme or arrangement between two or more consultants with or without the knowledge of the Client, designed to establish prices at artificial, non-competitive levels;

(iv) "coercive practices" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract.

(b) will reject a proposal for award if it determines that the Consultant recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract; and

(d) will have the right to require that a provision be included requiring consultants to permit the Employer to inspect their accounts and records relating to the performance of the contract and to have them audited by authorized representatives of Employer.

1.8 Consultants, their Sub-Consultants, and their associates shall not be under a declaration of ineligibility for corrupt and fraudulent practices. Furthermore, the Consultants shall be aware of the provisions on fraud and corruption stated in the specific clauses in the General Conditions of Contract.

1.9 Consultants shall furnish information on commissions and gratuities, if any, paid or to be paid to agents relating to this proposal and during execution of the assignment if the Consultant is awarded the Contract, in the Financial Proposal.

1.10 The Data Sheet indicates how long Consultants' Proposals must remain valid after the submission date. During this period, Consultants shall maintain the availability of Professional staff nominated in the Proposal. The Client will make its best effort to complete the process within this period. Should the need arise, however, the Client may request Consultants to extend the validity period of their proposals. Consultants who agree to such extension shall confirm that they maintain the availability of the Professional staff nominated in the Proposal, or in their confirmation of extension of validity of the Proposal, consultants could seek replacement up to a maximum of 50% key personnel .If any Consultant seeks any replacement(s), while extending the bid validity, then the same shall be evaluated for ascertaining suitability of replacement as per the provisions of the RFP and remuneration shall not be reduced for any such replacement(s). However, the technical evaluation shall take into account of the originally submitted CV(s) only irrespective of replacement sought.

2. CLARIFICATIONS AND AMENDMENT OF RFP DOCUMENTS

2.1 The Consultants may request a clarification of any of the RFP documents up to the number of days indicated in the Data Sheet before the Proposal submission date. Any request for

clarification must be sent in writing by electronic mail to the Client's address indicated in the Data Sheet. The Client will respond by issuing the clarifications in KPP Portal only to all consultants who have purchased the RFP document. Clarification/amendment will also be hosted on KPP Portal.

2.2 At any time before the submission of Proposals, the Client may for any reason, whether at its own initiative or in response to a clarification requested by a Consulting firm, modify the RFP documents by amendment. Any amendment shall be issued in writing through addendum. Addendum/Corrigendum/ pre-bid clarifications will be published in KPP Portal only. The Client may at its discretion extend the deadline for the submission of Proposals.

3. PREPARATION OF PROPOSAL

3.1 You are requested to submit your proposal in Two Parts strictly using the formats enclosed herewith (refer section 3,4and 5) in 2 separate envelopes/ packages and put together in one single outer envelope/package. The two parts shall be:

Part 1: Technical Proposal and Part 2: Financial Proposal.

The proposal shall be written in the English language as specified in the Data Sheet. All pages of the Proposal shall be signed by an authorized representative. The representative's authorization shall be confirmed by written Power of Attorney duly notarized to be submitted with the proposal.

Part 1: Technical Proposal

3.2 You are expected to examine all terms and conditions included in the documents.

Failure to act or to provide all requested information will be at your own risk and may result in rejection of your proposal.

3.3 During preparation of the technical proposal, you may give particular attention to the following:

i. The man-months for the assignment shall be that stated in the Terms of Reference. The same shall be considered for the purpose of evaluation as well as award. In case the man months of TOR are amended in view of Client's own initiative or in response to clarification sought by any Consulting firm, the man months so amended and published shall be considered for the purpose of evaluation as well as award.

ii. The Consultants should prefer to field as many of their permanent staff as possible. The permanent staff would be considered those already employed with the firm prior to one year from the month during which this Tender Notice is issued. Applicant shall submit the details of the period of employment of the proposed personnel with the firm.

iii. A good working knowledge of the language specified in the data sheet is essential for key professional staff on this assignment. Reports must be in the language (s) specified in the data sheet

3.4 Your Technical Proposal must provide the following information, using but not limited to the formats attached in the Section 3 & 4.

i. A brief description of the firm's organisation and an outline of recent experience of the Consultants and, in the case of Joint Venture, for each partner, on assignments of a similar nature. The information which you shall provide on each assignment should indicate, inter-alia, the profiles of the staff provided, duration, contract amount and firm's involvement. The details of assignments on hand shall also be furnished by the Consultant separately.

ii. Any comments or suggestions on the TOR and a description of the methodology (work plan) which the firm proposes to execute the services, illustrated with bar charts of activities.

iii. Site Appreciation: limited to four A4 size pages in 1. 5 space and 12 font including photographs, if any;

iv. Proposed methodology for the execution of the services illustrated with bar charts of activities, including any change proposed in the methodology of services indicated in the TOR, and procedure for quality assurance: Maximum
4 pages;

v. The proposed methodology should be accompanied by the consultant's initial view, key challenges they foresee and potential solutions. It should also include details on adoption of superior technology along with proof: limited to six A4 size pages in 1.5 space and 12 font including photographs;

vi. The proposal shall indicate as to whether the firm is having the facilities for carrying out the following field activities or these are proposed to be outsourced to specialized agencies.

- Surface defects detection and roughness measurement using Network Survey Vehicle
- Pavement strength measurement using FWD
- Bridge inspection using Mobile Bridge Inspection Unit
- Road signs inspection using Retro Reflectometer

vii. Proposed Quality Audit Methodology including Quality Assurance Plan.

viii. In case the Consultant envisages outsourcing any or all of the above services to the expert agencies, the details of the same indicating the arrangement made with the agencies need to be furnished. These agencies would however, be subject to approval of the client to ensure quality input by such agencies before award of the work. For out-sourced services, proposed firms/consultants should have such experience on similar projects.

ix. The composition of the proposed staff team, the tasks which shall be assigned to each and their timing;

x. Requirement for submission of CVs.

a. The CVs of following key personnel in the format as per AppendixB-6 is to be furnished in their technical bids.

Sr. No	Key Personnel	Exp. Years	Interim inputs months	Full Inputs months	Total inputs months	Req. Nos

1	Team Leader Cum Senior Tunnel Engineer	20		30	30	1
2	Tunnel Design Expert	15	12		12	1
3	Senior Geotechnical Engineer	15	18		18	1
4	Senior Electrical & Mechanical (E&M) Expert	15	12		12	1
5	Senior Geologist	15	12		12	1
6	Highway cum Pavement Engineer	15		30	30	1
7	Quantity Surveyor/Documentation Expert	10		24	24	1
8	Contract Expert	10		24	24	1
9	Project Associate (Resident)	10		84	84	1
10	Project Associates	10		48	48	1
11	Site Engineers	8		30	30	4
12	Support Staff	5		30	30	2
Total			**66**	**264**	**354**	**19**

b. It may please be ensured that the format is strictly followed and the information furnished therein is true and correct. The CV must indicate the work in hand and the duration till which the person will be required to be engaged in that assignment. The Firm shall ensure that details furnished in the CV by the personnel are correct. If any information is found incorrect, at any stage, action including termination and debarment from future Bangalore Development Authority projects for a minimum period of 2 years may be taken by Bangalore Development Authority on the personnel and the Firm.

c. Key information should include years with the firm and degree of responsibility held in various assignments. In CV format, at summary, the individual shall declare his qualification & total experience (in years) against the requirements specified in TOR for the position (Ref. Enclosure-B of TOR). If any information is found incorrect, at any stage, action including termination and debarment from future Bangalore Development Authority projects up to 2 years may be taken by Bangalore Development Authority on the personnel and the firm.

d. CVs of Key Personnel having intermittent inputs will be considered only if the assignments on hand as on 7 days before due date of proposal including those for which LOA has been received from the Client or for which Consultant has been declared as H1 are such that the key personnel are able to proportionately devote the given man months for this project.

e. All the CVs which are to be evaluated should be complete in all respects including signing and certification by the individual and the firm.

f. CV of Team Leader Cum Senior Tunnel Engineer, Tunnel Design Expert, Senior Geotechnical Engineer, Senior Electrical & Mechanical (E&M) Expert, Senior Geologist, Highway cum Pavement Engineer, Quantity Surveyor/Documentation Expert, Contract Expert, Project Associate (Resident), Project Associates - Key Personnel must score Minimum 75% marks of allotted marks. If not, the proposal shall not be considered further.

g. If the Key Personnel does not fulfill the minimum academic qualification (as mentioned at Enclosure-B of TOR of RFP), the overall score of his CV will be evaluated as zero. If the Key Personnel does not fulfill the minimum qualification related to experience (as mentioned at Enclosure-B of TOR of RFP), then zero marks will only be assigned for that sub criteria. In case more than 3 CV scores less than 75% marks or Team leader cum Senior Highway Engineer scores less than 75% marks, the proposal shall be considered non-responsive. At the time of award of contract, due to exigencies any of the proposed key personnel could not be mobilized under the contract, Successful bidder has to replace key personnel with equivalent or better qualification. The reduction in remuneration of such replacements shall be 10% for each replacement.

h. In case CV of a person is turned out to be fake/incorrect/inflated during the assignment, the consultancy firms shall have to refund the salary and perks drawn including interest @12% per annum in respect of the person apart from other consequences. In addition to above, 10% of the salary and perks to be refunded shall be recovered from the Firm as penalty. In the event the penalty is not paid by the Consultancy Firm, the same shall be recovered from encashment of performance security of the firm.

i. It is also clarified that any key personnel, if debarred during the period between receipt of bid and award of the contract and is required to be replaced as per the provisions of the RFP, then the replacement shall not be considered as part of replacement by the Authority's Engineer and hence no deduction in remuneration shall be affected. However, in this case the original CV will be considered for evaluation purpose.

xi. Deployment Schedule for each key personnel should be formulated and incorporated in the Technical Proposal which will be reviewed on quarterly basis.

xii. Estimates of the total time effort (person x months) to be provided for the services, supported by bar chart diagrams showing the time proposed (person x months) for each professional staff and sub professional staff.

xiii. Any additional information.

3.5 The technical proposal must NOT include any financial information.

Part 2: Financial Proposal

3.6 Your Financial Proposal must be strictly using the formats attached in Section 5. No additional items/quantities other than that specified in the formats should be proposed by the Consultants since the same shall not be considered for the evaluation/award. Consultants shall be paid billing rates for services as per financial proposal submitted by them basis. Beginning 13th months from the last date of submission of bid, billing rates shall be increased to cover all items of the contract i.e. remuneration, vehicle hire, office rent, consumables, furniture etc. @ 5% every 12 months.

3.7 The Financial Proposal should clearly identify as a separate amount, the local taxes (including social security), duties, fees, levies and other charges imposed under the applicable law, on the consultants, the sub-consultants, and their personnel (other than nationals or permanent residents of the government's country); unless the Data Sheet specifies otherwise. This cost, however, will not be considered in evaluation.

3.8 Consultants may express the price of their services in the Indian Rupees only.

3.9 Goods & Service tax as applicable shall be paid to the Consultant while making payment for services rendered. The consultants shall then deposit the same with the tax authorities and provide a proof of having done so within next 90 days in line with policy circulars issued by Employer. Employer shall pay only the Goods & service tax.

4. SUBMISSION, RECEIPT AND OPENING OF PROPOSALS

4.1 PREPARATION & SUBMISSION OF APPLICATIONS:

A. Detailed RFP may be downloaded from KPP portal of Employer and the Application may be submitted online following the instructions appearing on the screen.

B. The following shall be the form of various documents in the Application:

(I) Technical Proposal {Only Electronic Form (to be uploaded on the KPP Portal of Employer)}

(a) Power of Attorney for signing the Application

(b) **(Deleted)** If applicable, the Power of Attorney for Lead Member of JV;

(c) **(Deleted)** Copy of Memorandum of Understanding between JV partners, if applicable;

(d) Copy of Memorandum of Understanding with Associate, if applicable.

(e) Firms credentials as per format prescribed in SECTION-3 OF RFP. (The details are to be submitted through KPP PORTAL only)

(f) Technical proposal as per format prescribed in SECTION-4 OF RFP. (The details are to be submitted through KPP PORTAL only.)

II) Financial proposal as per format prescribed in section – 5 of RFP

(III) **(Not Applicable)** Demand Draft towards cost of RFP of Rs.5,000/- (Rupees Five thousand only) in favour of <_____>;

(IV) Bidders have to comply with the OM No. 13030/09/2008-vig dated 28th January, 2013(copy enclosed) regarding Integrity pact.

C. The successful bidder shall submit the original documents specified above in point no.4.1 B (I) (a), (b), (c)& (d) above together with their respective enclosures to the Authority before signing of the Agreement.

i.) The Applicant shall upload scanned copies of the Technical Proposal and Financial Proposal as specified in point nos. 4.1 (B) (I) ,(II), (III) & (IV) above on the KPP Portal of Employer before Indian Standard Time on the Application due date mentioned in KPP Portal. Financial Proposal is to be submitted On-line only and no hard submission is to be made.

4.2 Modification / Substitution/ Withdrawal of bids:

(i) The Bidder may modify, substitute or withdraw its e- bid, prior to the Bid Due Date. No Bid shall be modified, substituted or withdrawn by the Bidder on or after the Bid Due Date.

(ii) Any alteration/ modification in the Bid or additional information supplied subsequent to the Bid Due Date, unless the same has been expressly sought for by the Employer, shall be disregarded.

(iii) For modification of e-bid, bidder has to cancel its old bid from KPP Portal and re-upload / resubmit digitally signed modified bid.

4.3 OPENING AND EVALUATION OF APPLICATIONS:

(i) Opening of Proposals will be done through only in KPP Portal for both Financial Proposal and Technical Proposal.

(ii) For participating in the tender, the authorized signatory holding Power of Attorney shall be the Digital Signatory. In case the authorized signatory holding Power of Attorney and Digital Signatory are not the same, the bid shall be considered nonresponsive. The Employer will open the Technical Proposal in KPP Portal only and bidders are advised to visit the portal for regular update of the tender.

(iii) The Financial Proposal will be opened of the short-listed applicants who qualify for financial opening as per RFP. The Financial Proposal shall be opened in KPP Portal only.

5 PROPOSAL EVALUATION

5.1 A two -stage procedure shall be adopted for evaluating the proposals.

5.2 Deleted

Technical Proposal

5.3 The Evaluation Committee appointed by the Employer shall witness and certify its evaluation applying the evaluation criteria and point system specified in the data sheet. Each responsive proposal shall be attributed a technical score (ST.) Only those Applicants whose Technical proposal score 75 marks or more out of 100 shall qualify for further consideration.

Financial Proposal

5.4 After the evaluation of Technical Proposals is completed and the shortlist of firms is finalised, the Employer shall publish the evaluation results in KPP Portal.

5.5 The Financial Proposals shall be opened KPP Portal only.

5.6 The Evaluation Committee will determine whether the submitted Financial Proposals are complete (i.e. whether they have included cost of all items of the corresponding proposals; if not, then the cost towards such missing items will be considered as NIL, but the Consultant shall, however, be required to witness and certify such obligations without any additional compensation.) and without computational error. In case under such circumstances, if Client feels that the work cannot be carried out within the overall cost as per the submitted financial proposal, such proposals shall be considered non responsive.

5.7 The lowest financial proposal (FM) will be given a financial score (SF) of 100 points. The financial scores of other proposals will be computed as follows:

$$S_F = 100 \times F_M/F \text{ (F= amount of financial proposal)}$$

5.8 Proposals will finally be ranked according to their combined technical (ST) and financial (SF) scores as follows:

$$S = S_T \times Tw + S_F \times Fw$$

Where S is the combined score, and Tw and Fw are weights assigned to Technical Proposal and Financial Proposal that shall be 0.70 and 0.30 respectively.

5.9 The selected Authority's Engineer shall be the first Ranked Applicant (H-1, having the highest combined score). In the event the proposals of two or more consultants have the same scores in the final ranking, the proposal with the highest technical score should be ranked first.

6 AWARD OF CONTRACT

6.1 The Client shall issue letter of award to selected Consultant and ask the Consultant to provide Performance Security as in Para 7 below. If the selected Consultant fail to provide performance security within the prescribed time or the Consultant fail to sign the Contract Agreement within prescribed time, then EMD of the Successful bidder shall be forfeited and client will issue the cancellation letter of award of contract.

7 PERFORMANCE SECURITY

7.1 The successful consulting firm shall have to submit a Bank Guarantee (BG) for an amount of 5% of the Contract Value within 15 days of issue of LOA. The BG shall be valid for a period of 26 months i.e. up to 2 months beyond the expiry of the Contract period of 24 months. The BG shall be in the format specified in Appendix H of draft contract form and furnished from a Nationalised Bank/Any Scheduled Bank approved by RBI having a net worth of not less than 1000 crore as per latest Annual Report of the Bank.

Further, in case where the bid of the successful consulting firm is less than 85% of the average of all bids received, the successful consulting firm shall have to submit an Additional Performance Security (APS) in the form of a Bank Guarantee for 30% of the differential value between the successful bid and average of all the bids received. The BG shall be valid for a period of 26 months i.e. up to 2 months beyond the expiry of the Contract of 24 months. The other requirements of APS are same as those of Performance Security.

7.2 In the event the Consultant fails to provide the security within 15 days of date of LOA, it may seek extension of time for a period of 15 (Fifteen) days on payment of damages for such extended period in a sum of calculated at the rate of 0.1% (Zero Point One Percent) of the contract price for each day until the performance security is provided. For the avoidance of doubt the agreement shall be deemed to be terminated on expiry of additional 15 days' time period.

7.3 Notwithstanding anything to the contrary contained in this Agreement, the Parties agree that in the event of failure of the Consultant to provide the Performance Security in accordance with the provisions of Clause 7.1 within the time specified therein or such extended period as may be provided by the Authority, in accordance with the provisions of Clause 7.2 and thereupon all rights, privileges, claims and entitlements of the Consultant under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Consultant, and LoA shall be deemed to have been withdrawn by mutual agreement of the Parties. Authority may take action debar such firm for future projects for a period of 1-2 years.

8. Signing of Contract Agreement

After having received the performance security and verified it, the Client shall invite the selected bidder for signing of Contract Agreement on a date and time convenient to both parties within 15 days of receipt of valid Performance Security.

9. Additional Clauses:

DATASHEET

(As Mentioned in Letter of Invitation to Consultants)

Sl No	Letter of Invitation to Consultants Clause Reference	Details
1.	1.3	The assignment shall be implemented in Construction Period (24 Months) and Maintenance Period (60 Months).
2.	3.1	The Bidders must submit their bids in English language only. Bids proposals submitted with other language shall be rejected outrightly.
3.	3.9 (a)	Bangalore Development Authority shall reimburse only Goods and service tax. Authority's Engineer has to assess all other taxes and should inbuilt them in their financial proposal. These taxes (other than Goods and service tax) should not be provided separately. Consultants are requested to consult Tax Consultants for details.
4.	4.2	Clarification may be requested 7 days prior to Pre Proposal Conference. The address for requesting clarification is: The Executive Engineer, Infrastructure Division, Bangalore Development Authority T. Chowdaiah Road, Kumara Park West, Bengaluru – 560 020. Official e-mail id: bdainfraprojects@gmail.com
5.	5.3	The detailed evaluation criteria have been provided in the Table-1: The weightage given to technical proposal is 70%. The weightage given to financial proposal is 30%.
6.	9.1	Pre-Proposal Conference shall be held at: Employer's Office on 07/07/2026 at 16.00 hrs
7.	9.2	The proposal shall be valid for 120 days after the last date of submission.
8.		The firm shall begin carrying out the services within one month of signing of the Consultancy Agreement.

5.3 Technical Evaluation: The points assigned to Technical Evaluation criteria are as follows

S. No.	Description	Marks
1	Firm's relevant experience in last 7 years	30
2	Approach & Methodology and Work Plan	20
3	Qualification and Relevant experience of the proposed key personnel.	50
	Total	**100**

5.3.1 Sub criteria for Relevant Experience of the firm for the assignment

Sl no	Evaluation Criteria	Prescribed marks
1.	The Bidder should have achieved an Average Annual Turnover from consultancy business shall be Rs. 100 Crore in the last 7 years ie. FY 2018-19 to FY2024-25. ***The Bidder should submit the CA issued turnover certificate for the respective years along with UDIN. The same should be reflected in the ICAI website also. If any figures mentioned in the CA certificate and ICAI website found mismatch for any years out of 7 years, such bidder bid will be rejected.*** ***Also, balance sheet, Profit and Loss Statements and ITR copies of the last seven years shall be submitted.***	5
2.	The professionals shall possess a Degree in Civil Engineering, Tunnel Engineering, Geotechnical Engineering, Geological Engineering, Engineering Geology, Structural Engineering, Transportation Engineering, Environmental Engineering/Science, Electrical Engineering, Mechanical Engineering, Safety Engineering, or other relevant disciplines associated with tunnel planning, design, construction, operation and maintenance tunnel with employment in the firm for more than one year. ***The current Employment Certificates of all the key personnel in the bidder company shall be submitted.***	10
3.	Experience as Independent Engineer/Authority Engineer/Construction Supervision in Number of Tunnel Road Projects of length equal to project length or more of similar category for which RFP invited in last 7 years* ***The work done certificate shall be submitted issued by not less than the competent authority. For avoidance of doubt not lees than the rank of Executive Engineer or equivalent.***	10

4.	Experience in DPR preparation for Number of Tunnel Projects with at least project length or more of similar category for which RFP invited in last 7 years * ***The work done certificate shall be submitted issued by not less than the competent authority. For avoidance of doubt not less than the rank of Executive Engineer or equivalent.***	5
Total Marks		30

* Consultants should give details of the experience of the firm considering the completed and the on-going tunnel assignments, separately for PPP and non-PPP Projects along with experience certificates from clients. This list of the completed works should also include those assignments which are substantially (90% of Contract value) completed. No Qualification/Experience etc. shall be considered without proof of experience.

Experience of Authority's Engineer for having offered consultancy services to a private organization shall not be considered as relevant experience for current assignment.

** Similar projects means 2/4/6 lane tunnel road as applicable for the project for which RFP is invited. For 2-lane, projects experience of 4/6 lane also to be considered with a multiplication factor of 1.5. Experience of 4/6 lane shall be considered interchangeably for 4/6 laning projects. For 4/6 laning projects, experience of 2 lane will be considered with a multiplication factor of 0.4, but only for those 2 lane projects, whose cost of consultancy services was more than Rs.3.0 crores.

(Deleted) In case of JV the turnover and experience details of Lead and JV Employer's certificate should be submitted substantiating the experience claimed by the firm.

5.3.2 Approach and methodology and work plan: 20 Marks.

Sl no	Evaluation Criteria	Maximum Marks	Evaluation Details
1.	Understanding of Project Requirements and Scope	**4**	Assessment of bidder's understanding of the tunnel project, objectives, scope of AE services, contractual responsibilities, construction challenges, and expected deliverables.
2.	Approach and Methodology for Tunnel Supervision	**6**	Evaluation of proposed methodology for supervision of tunnel excavation, geological assessment, support systems, lining works, waterproofing, MEP works, quality monitoring, and ensuring compliance with approved designs and specifications.
3.	Quality Assurance, Safety and Risk Management Approach	**4**	Assessment of QA/QC procedures, inspection methodology, testing and certification process, safety management system, identification of tunnelling risks, and proposed mitigation measures.

4.	Project Monitoring, Contract Management and Reporting System	**3**	Evaluation of approach for progress monitoring, milestone tracking, review of contractor submissions, payment certification, variation management, claim review, and reporting mechanism
5.	Work Plan, Resource Deployment and Innovation	**3**	Assessment of implementation plan, deployment of key experts, site supervision arrangement, use of modern monitoring tools/digital systems, and value-added approaches for successful project delivery.
Total Marks		**20**	

Note: The bidders shall submit their approach and methodology and work plan for the above-mentioned details. The copy of the same shall be uploaded in their technical bids.

5.3.3 Standalone Tunnel Project:

S. No	Staff Position	Marks.
1	Team Leader Cum Senior Tunnel Engineer	10
2	Tunnel Design Expert	5
3	Senior Geotechnical Engineer	4
4	Senior Electrical & Mechanical (E&M) Expert	4
5	Senior Geologist	4
6	Highway cum Pavement Engineer	4
7	Quantity Surveyor/Documentation Expert	4
8	Contract Expert	4
9	Project Associate (Resident)	5
10	Project Associate	2
11	Site Engineers	4
12	Support Staff	0
	Total	**50**

Note: The support staff shall not be considered for evaluation as this is non-technical position. But bidders must submit their CVs in the proposal. The CV of the key personnel shall be evaluated by distributing marks as Education – 30%, Experience -60% and Language – 10%.

Sl. No.	Key Professionals	Required Nos. & Marks	Qualification 30%	Working Experience 60%	Kannada Language 10%
1.	Team Leader Cum Senior Tunnel Engineer	1 No (10 Marks)	PG/G – 3.0	20 Yrs – 3.5 20 –22 Yrs – 5 > 22 Yrs - 6	Kan – 1.0
2.	Tunnel Design Expert	1 No (5 Marks)	PG/G – 1.5	15 Yrs – 1.50 15 – 17 Yrs – 2.25 > 17 Yrs – 3.0	Kan – 0.5

3.	Senior Geotechnical Engineer	1 No (4 Marks)	G – 1.2	15 Yrs – 1.2 15 – 17 Yrs – 1.8 > 17 Yrs – 2.4	Kan – 0.4
4.	Senior Electrical & Mechanical (E&M) Expert	1 No (4 Marks)	PG/G – 1.2	15 Yrs – 1.2 15 – 17 Yrs – 1.8 > 17 Yrs – 2.4	Kan – 0.4
5.	Senior Geologist	1 No (4 Marks)	PG/Phd – 1.2	15 Yrs – 1.2 15 – 17 Yrs – 1.8 > 17 Yrs – 2.4	Kan – 0.4
6.	Highway cum Pavement Engineer	1 No (4 Marks)	PG/G – 1.2	15 Yrs – 1.2 15 – 17 Yrs – 1.8 > 17 Yrs – 2.4	Kan – 0.4
7.	Quantity Surveyor/Documentation Expert	1 No (4 Marks)	G/Dip – 1.2	10 Yrs – 1.2 10 – 12 Yrs – 1.8 > 12 Yrs – 1.2	Kan – 0.4
8.	Contract Expert	1 No (4 Marks)	PG/G – 1.2	10 Yrs – 1.2 10 – 12 Yrs – 1.8 > 12 Yrs – 1.2	Kan – 0.4
9.	Project associate (resident)	1 No (5 Marks)	PG/G – 1.5	15 Yrs – 1.50 15 – 17 Yrs – 2.25 > 17 Yrs – 3.0	Kan – 0.5
10.	Project associate	1 No (4 Marks)	G – 1.2	10 Yrs – 1.2 10 – 12 Yrs – 1.8 > 12 Yrs – 2.4	Kan - 0.4
11.	Site Engineers	4 No (1 each)	G – 0.3	8 Yrs – 0.3 8 – 10 Yrs – 0.45 > 10 Yrs – 0.6	Kan – 0.1

SECTION 3:

FORMATS FOR SUBMISSION OF FIRMS CREDENTIALS

The proposal should contain the following information in enclosed format attached at Appendix A.

- Year of Establishment of Firm
- Average annual turnover (last three years)

Note: The Firm shall submit Certificate of Incorporation and audited balance sheet for the last three years [FY2022-23, FY2023-24 and FY2024-25]*. For claiming experience of Highway projects, completion certificate from employer should be enclosed. The proposal should also contain the details of the key personnel viz. their name, qualification, expertise area, experience and years of association with the firm.

*To be modified appropriately.

Appendix A

The following information related to the firm should be provided in the proposal.

i. Name of the package applied for:-

ii. Year of establishment of firm*

Consultant	Year of Establishment	Country	Type of Organization			
			Individual	Partnership	Corporation	Other
Individual						

NOTE:- *Copy of Certificate of incorporation shall be submitted.

iii. Office/ Business Address/Telephone nos. /Cable Address.

iv. Narrative description of firm (Not more than 2 sheets)

v. Name of two (2) principals who may be contacted with title and telephone number/fax number/e-mail.

vi. Financial Statement of the last three years. **

Sl. No.	Particular	<2018-19>	.....	<2024-25>
i.	Annual turnover from Consulting business			
ii.	Total Assets			
iii.	Current Assets			

Balance Sheet/ Auditor Certificate of last 3years <2018-19 to 2024-25> shall be submitted as evidence of Annual Turnover.

** a) The amount shall be stated in INR. (Consider 1US Dollar = Rs. And 1 Euro = Rs.) (This will be the exchange rates as per Reserve Bank of India rounded off to nearest Rupee applicable at the time of RFP invitation).

b) The currency conversion rate for the respective years shall be mentioned for other international currencies.

vii. Experience as Authority Engineer/Independent Consultant/Construction supervision of Highway projects, separately for PPP and non-PPP Projects during the last 7 years. ***

S No	Projects Name / Year Sole Consultant	Type of Services rendered	Description of Highway Project/ Length (kms)	Client (with complete address, contact person, Telephone Nos. and Fax Nos.)	Total Fee for the Consultancy Assignment (INR)	Fee received by Applicant	%age of total fee received by the firm	Approx. Cost of Highway Project	Period
1	2	3	4	5	6	7	8	9	10
		A. Completed / Substantially completed projects:							

S No	Projects Name / Year Sole Consultant	Type of Services rendered	Description of Highway Project/ Length (kms)	Client (with complete address, contact person, Telephone Nos. and Fax Nos.)	Total Fee for the Consultancy Assignment (INR)	Fee received by Applicant	%age of total fee received by the firm	Approx. Cost of Highway Project	Period
		A. Completed / Substantially completed projects: 1. 2. 3. B. Projects in progress: 1. 2. 3.							

vii. Experience in DPR/ Feasibility Study cum Preliminary Design Report preparation of 2/4/6 laning / Bridge Highway Projects separately for the PPP and non-PPP projects during the last 7 years. ***

S No	Projects Name / Year Sole Consultant	Type of Services Rendered	Length of Project (kms)	Client (with Complete address, contact person, telephone Nos. and Fax Nos.)	Total Fee for the Consultancy Assignment (INR)	Fee received by Applicant	%age of total fee received by the firm	Period
1	2	3	4	5	6	7	8	9

***a) 2/4/6 lane/Bridge work as applicable for the project for which RFP is invited. For 2lane projects experience of 4/6 lane also to be considered with a multiplication factor of 1.5. Experience of 4/6 lane shall be considered interchangeably for 4/6 laning projects. For 4/6 lane projects, experience of 2 lane will be considered with a multiplication factor of 0.4, but only for those 2-lane projects whose cost of consultancy services was more than Rs.3.0 crores. For standalone bridge projects, experience in bridge work (either standalone project or as a part of road project) only be considered.

b) Only those projects, to be included in the table which are Highways Projects and for which clients certificates from the concerned Government agencies are enclosed with the proposal.

c) The details of bridges having length more than 200m (500m in case the project consist of bridges of length more than 500m) in the listed projects is to be specifically mentioned.

d) The weightage given for experience of a firm would depend on the role of the firm in the respective assignments. The firm's experience would get full credit if it was the sole firm in the respective assignment. If the applicant firm has completed projects as JV with some other firms, weightage shall be given as per the JV share***. However if the applicant firm has executed the project as associate with some other firms, 25% weightage shall be given to the applicant firm for the projects completed under such association

e) For weightage of experience in any past Consultancy assignment, experience certificate from the client shall be submitted. In absence of clear demarcation of JV share in client certificate, the weightage will be treated as 60 % for lead partner and 40% for minor partner. Annual turnover duly certified by Chartered Accountant shall be accepted. In case of non-availability of such documents no weightage of turnover/experience will be considered.

(ix) Assignments on hand including those for which the Letter of Acceptance from the clients received as on 7 days prior to due date for submission of proposals: The details shall be given in the following format.

S. No	Name of Assignment	Client	Role of the firm	Date of letter of Acceptance	Date of Agreement if signed	Present status of Assignment	Team Members provided by the firm		
			Sole, Lead				Name	DOB	Position
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

Key Personnel	Number of key personnel employed		
	Sole Applicant		
Team Leader Cum Senior Tunnel Engineer			
Tunnel Design Expert			
Senior Geotechnical Engineer			
Senior Electrical & Mechanical (E&M) Expert			
Senior Geologist			
Highway cum Pavement Engineer			
Quantity Surveyor/Documentation Expert			
Contract Expert			
Project Associate (Resident)			
Project Associates			
Site Engineers			
Support Staff			

SECTION 4:
FORMAT FOR SUBMISSION OF TECHNICAL PROPOSAL

Appendix B-1	Technical proposal submission form.
Appendix B-2	Site Appreciation
Appendix B-3	Approach paper on methodology for performing the assignment
Appendix B-4	Facility for field investigation and testing
Appendix B-5	Composition of the Team and Task(s) of each Team member
Appendix B-6	Curriculum vitae of proposed Professional staff.
Appendix B-7	Time schedule for deployment of Professional staff
Appendix B-8	Activity (works) schedule.
Appendix B-9	Affidavit – Correctness of Experience claimed by the Firms
Appendix B-10	Integrity Pact

APPENDIX B-1-Technical proposal submission form.

FROM (Name of Firm)	To: (Name and Address of Client)

Ladies/Gentlemen:
Subject: Submission of Technical and Financial Proposal for engagement as Authority Engineer for the EPC work.

We, the undersigned, offer to provide the consulting services for the above in accordance with your Request for Proposal dated (Date), and our Proposal. We are hereby submitting our Proposal, which includes this Technical Proposal and a Financial Proposal sealed under a separate envelope for the above-mentioned work.

My/Our registration No. on KPP Portal is ……. And my/our KPP Portal Team ID is ……..

Our Proposal is binding upon us. We understand you are not bound to accept any Proposal you receive

We remain,

Yours sincerely,

Managing Director/Head of the firm/
Authorised Representative of the firm + *

APPENDIX B-2: SITE APPRECIATION

Shall give details of site as per actual site visit and data provided in RFP and collected from site supported by photographs to demonstrate that responsible personnel of the Authority's Engineer have actually visited the site and familiarized with the salient details/ complexities and scope of services.

APPENDIX B-3: APPROACH PAPER ON METHODOLOGY FOR PERFORMING THE ASSIGNMENT

The approach and methodology will be detailed precisely under the following topics.

1) Methodology for services, surveying, road condition data collection and analysis [not more than 2 pages]

2) Key challenges foreseen and proposed solutions in carrying out the assignment [not more than 1page]

3) Quality Audit methodology including Quality Assurance Plan [not more than 6 pages]

APPENDIX B-4 : FACILITY FOR FIELD INVESTIGATION AND TESTING

1. State whether applicant has in-house (created in house at site)/ outsourced/ not available facility for
   - Lidar Survey equipment
   - Surface defects detection and roughness measurement using Network Survey Vehicle
   - Pavement strength measurement using FWD
   - Bridge inspection using Mobile Bridge Inspection Unit
   - Road signs inspection using Retro Reflectometer if any as applicable
2. In-case answer to 1 is available (created in house at site) a list of field investigation and testing equipment is to be attached.
3. In case answer to 1 is outsourced/not available – arrangements made or proposed to be made for each of the above field investigations is to be attached.
4. For experience in NSV, FWD, MBIU and reflectometer, references need to be provided in the following format:

REFERENCES

Relevant Services Carried Which Best Illustrate Qualifications

The following information should be provided in the format below for each reference assignment for which your firm, either individually as a corporate entity or as one of the major companies within a consortium, was legally contracted by the client:

<table>
<tr><td colspan="2">Assignment Name:</td><td>Country:</td></tr>
<tr><td colspan="2">Location within Country:</td><td>Professional Staff Provided by your firm:</td></tr>
<tr><td colspan="2">Name of Client :</td><td>No. of Staff :</td></tr>
<tr><td colspan="2">Address :</td><td>No. of Staff Months :</td></tr>
<tr><td colspan="3">Technology Used:</td></tr>
<tr><td>Start Date (Month / Year)</td><td>Completion Date (Month / Year)</td><td>Approx. Value of Services in INR/current USD):</td></tr>
<tr><td colspan="2">Name of JV/Association Firm(s)if any:</td><td>No. of Months of Professional Staff provided by Associated Firm(s)</td></tr>
<tr><td colspan="3">Status of your Company in the Assignment i.e., Sole/Lead Member/Other Member/Associate</td></tr>
<tr><td colspan="3">Narrative Description of Project :</td></tr>
<tr><td colspan="3">Description of Actual Services Provided by your Company:</td></tr>
</table>

Signature of Authorised Representative
(Certificate from Employer regarding experience should be furnished)

APPENDIX B-5: COMPOSITION OF THE TEAM PERSONNEL, AND TASK(S) OF EACH TEAM MEMBER

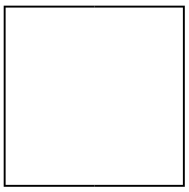
2. Technical/Managerial Staff

Sl. No.	Name	Position	Task
1 2 3 4 … …			

i. Support Staff

Sl. No.	Name	Position	Task
1 2 3 4 … …			

APPENDIX B-6 : FORMATOF CURRICULUM VITAE (CV) FOR PROPOSED PROFESSIONALSTAFF

Proposed Position : …… Photograph 

Name of Firm:.....
Name of Staff :..... Profession :.....
Date of Birth :
Years with Firm/Entity: .....Nationality:.....
Membership of Professional Societies :.....
Detailed Task Assigned : Please attach printout of CV along with all the relevant details uploaded on KPP Portal
l. Certification by the Candidate
I, the undersigned,(Name and Address) undertake that this CV correctly describes myself, my qualifications and my experience and Employer would be at liberty to debar me if any information given in the CV, in particular the Summary of Qualification & Experience vis-à-vis the requirements as per TOR is found incorrect. I further undertake that I have neither been debarred by Bangalore Development Authority or any other central/stage government organization nor left any assignment with the
consultants engaged by Employer / contracting firm (firm to be supervised now) for any continuing work of Employer without completing my assignment. I will be available for the entire duration of the current project (named…..).If I leave this assignment in the middle of the work, Employer would be at liberty to debar me from taking any
assignment in any of the Employer works for an appropriate period of time to be decid ed by the Employer. I have no objection if my services are extended by the Employer for this work in future.

I further undertake that my CV is being proposed for this project by --------- (the applicant firm) and I have not given consent to any other consultant(s) to propose my CV for any position for this project.

I further undertake that if due to my inability to work on this project due to unavoidable circumstances, due to which consultant's firm is forced to seek replacement. In such unavoidable circumstances, I shall not undertake any employment in Employer projects during the period of assignment of this project and Employer shall consider my CV invalid till such time.

I undertake that I have no objection in uploading/hosting of my credentials by Employer in public domain.

For Key Personnel having intermittent inputs, add the following:

I further certify that I am associated with the following assignments as on date (as on 7 days prior to due date for submission of proposal) including those for which LOA has been received by the firm and the inputs in these assignments shall not effect the work of the current assignment.

Name of Assignment	Client	Date of LOA	Likely start (Month / Year)	Likely end (Month / Year)	Total input of the person (man months)

…….. Date
(Signature of Key Personnel)

(Day/Month/Year)

The Authority's Engineer should carryout self-evaluation based on the evaluation criteria at Appendix-EC and furnish the same here. While submitting the self-evaluation along with bid, Authority's Engineer shall make references to the documents which have been relied upon in his self-evaluation.

Certification by the firm

The undersigned on behalf of ----------(name of consulting firm) certify that Shri-------- (name of proposed personnel) to the best of our knowledge has neither been debarred by Bangalore Development Authority or any other Central/State Government organization nor left his assignment with any other consulting firm engaged by the Employer /Contracting firm(firm to be supervised now) for the ongoing projects. We understand that if the information about leaving the past assignment is known to the Employer, Employer would be at liberty to remove the personnel from the present assignment and debar him for an appropriate period to be decided by the Employer.

……..Date : …… (Day/Month/Year)

[Signature of authorized representative of the Firm]

a) Deleted.
b) Deleted.
c) Deleted.
d) Deleted.
e) Deleted.
f) Deleted

APPENDIXB-7: TIME SCHEDULE FOR PROFESSIONAL PERSONNEL

A. Activity Schedule

Sl. No.	Name	Position	Month wise Program(in form of Bar Chart) [1st, 2nd, etc. are months from the start of assignment]												
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th and subsequent year	Number of Months
1															Subtotal(1)
2															Subtotal(2)
3															Subtotal(3)
4															Subtotal(4)
-															-
-															-

APPENDIXB-8 : ACTIVITY(WORKS)SCHEDULE

B. Activity Schedule

		Month wise Program(information of Bar Chart) [1st,2nd, etc. are months from the start of assignment]											
Sr.No.	Item of Activity (Works)	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
1	.....												
2	.....												
3	.....												
4	.....												
-	.....												
-	.....												

C. Completion and Submission of Reports

Sr.No	Reports :	Programme Date)
1	Monthly reports (Design and Construction)	
2	Quarterly Reports	
3	Various others reports as provided in the Concession Agreement such as Completion Report	

APPENDIX B-9: AFFIDAVIT FOR CORRECTNESS OF CV OF KEY PERSONNEL AND EXPERIENCE CLAIMED BY THE FIRMS

(To be submitted on non-judicial Stamp Paper)

I, the undersigned, on behalf of _____ (name of the Authority's Engineer submitting the proposal), do hereby certify that the details furnished in this proposal including CV of key personnel and experience claimed by the firm/firms are true and correct to the best of my knowledge and belief.

Managing Director/Head of the Firm/ Authorised Representative of the firm*

APPENDIX B-10: INTEGRITY PACT

(To be executed on plain paper and submitted along with Technical Bid/Tender documents for tenders having a value between Rs.5 Cr and 100 Cr. To be signed by the bidder and same signatory competent/ authorized to sign the relevant contract on behalf of the Bangalore Development Authority) Tender No._____

This integrity Pact is made at _____ on this _____day of _____2026.

Between

Bangalore Development Authority, hereinafter referred to as "The Principal", which expression shall unless repugnant to the meaning or contract thereof include its successors and permitted assigns.

And

_____ hereinafter referred to as "The Bidder/Contractor /Concessionaire/Consultant" and which expression shall unless repugnant to be meaning or context thereof include its successors and permitted assigns.

Preamble

Whereas, the Principal intends to award, under laid down organizational procedures, contract/s for "Authority Engineer Services for the project of ******in the State of ****** under _____ (*insert Project name)* -**** on ****** mode". The principal values full compliance with all relevant laws of the land, rules of land, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/ or Contractor(s)/Concessionaire(s)/ Consultant(s).

And whereas to meet the purpose aforesaid, both the parties have agreed to enter into this Integrity Pact (hereafter referred to as Integrity Pact) the terms and conditions of which shall also be read as integral part and parcel of the Tender documents and contract between the parties. Now, therefore, in consideration of mutual covenants stipulated in this pact, the parties hereby agree as follows and this pact witnesses as under:-

Article-1

Commitments of the Principal

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self, or third person, any material of immaterial benefit which the person is not legally entitled to.

b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. The Principal will exclude all known prejudiced persons from the process, whose conduct in the past has been of biased nature.

2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act or any other Statutory Acts or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions as per its internal laid down Rules/Regulations.

Article – 2

Commitments of the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s).

The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

a. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
b. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission or bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
c. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will not commit any offence under the relevant IPC/PC Act and other Statutory Acts; further the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will not use improperly, for purposes of completion or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
d. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) of foreignorigin shall disclose the name and address of the Agents/ Representatives in India, if any. Similarly the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) of Indian Nationality shall furnish the name and address of the foreign principle, if any.
e. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract. He shall also disclose the details of services agreed upon for such payments.
f. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
g. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will not bring any outside influence through any Govt. bodies/quarters directly or indirectly on the bidding process in furtherance of his bid.

Article – 3

Disqualification from tender process and exclusion from future contracts.

1. If the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s), before award or during execution has committed a transgression through a violation of any provision of Article-2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) from the tender process.
2. If the Bidder/ Contractor/ Concessionaire/ Authority's Engineer has committed a transgression through a violation of Article-2 such as to put his reliability or credibility into question, the Principal shall be entitled to exclude including blacklist and put on holiday the Bidder/ Contractor/ Concessionaire/ Authority's Engineer for any future tenders/ contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the Principal taking into consideration the full facts and circumstances of each case particularly taking into account the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder/ Contractor/ Concessionaire/ Authority's Engineer and the amount of the damage. The exclusion will be imposed for a minimum of 1 year.
3. A transgression is considered to have occurred if the Principal after due consideration of the available evidence concludes that "On the basis of facts available there are no material doubts".
4. The Bidder/ Contractor/ Concessionaire/ Authority's Engineer with its free consent and without any influence agrees and undertakes to respect and uphold the Principal's absolute rights to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.
5. The decision of the Principal to the effect that a breach of the provisions of this Integrity Pact has been committed by the Bidder/ Contractor/ Concessionaire/ Authority's Engineer shall be final and binding on the Bidder/ Contractor/ Concessionaire/ Consultant.
6. On occurrence of any sanctions/ disqualification etc arising out from violation of integrity pact, the Bidder/ Contractor/ Concessionaire/ Authority's Engineer shall not be entitled for any compensation on this account.
7. Subject to full satisfaction of the Principal, the exclusion of the Bidder/ Contractor/ Concessionaire/ Authority's Engineer could be revoked by the Principal if the Bidder/ Contractor/ Concessionaire/ Authority's Engineer can prove that he has restored/ recouped the damage caused by him and has installed a suitable corruption prevention system in his organization.

Article – 4

Compensation for Damages.

1. If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Arcticle-3, the Principal shall be entitled to forfeit the Earnest Money Deposit/ Bid Security or demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security (equivalent to 1% of Contract Price) apart from any other legal right that may have accrued to the Principal.
2. In addition to 1 above, the Principal shall be entitled to take recourse to the relevant provisions of the contract related to Termination of Contract due to Contractor/ Concessionaire/Consultant's Default. In such case, the Principal shall be entitled to forfeit the Performance Bank Guarantee of the Contractor/ Concessionaire/ Authority's Engineer and/ or demand and recover liquidated and all damages as per the provisions of the contract/concession agreement against Termination.

Article – 5

Previous Transgression

1. The Bidder declares that no previous transgressions occurred in the last 3 years immediately before signing of this Integrity Pact with any other Company in any country conforming to the anti corruption/ Transparency International (TI) approach or with any other Public Sector Enterprise/ Undertaking in India or any Government Department in India that could justify his exclusion from the tender process.
2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action for his exclusion can be taken as mentioned under Article-3 above for transgressions of Article-2 and shall be liable for compensation for damages as per Article-4 above.

Article-6

Equal treatments of all Bidders/ Contractors/ Concessionaires/ Consultants/ Subcontractors.

1. The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) undertake(s) to demand from all sub-contractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
2. The Principal will enter into agreements with identical conditions as this one with all Bidders/ Contractors/ Concessionaires/ Consultants and Subcontractors.
3. The Principal will disqualify from the tender process all Bidders who do not sign this Pact or violate its provisions.

Article – 7

Criminal charges against violating Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s)/ Sub-contractor(s).

If the Principal obtains knowledge of conduct of a Bidder/ Contractor/ Concessionaire/ Authority's Engineer or Subcontractor, or of an employee or a representative or an associate of a Bidder/ Contractor/ Concessionaire/ Authority's Engineer or Subcontractor, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Article – 8

Pact Duration

This Pact begins when both parties have legally signed it. (In case of EPC i.e. for projects funded by Principal and consultancy services). It expires for the Contractor/ Authority's Engineer 12 months after his Defect Liability period is over or 12 months after his last payment under the contract whichever is later and for all other unsuccessful Bidders 6 months after this Contract has been awarded. (In case of BOT Projects) It expires for the concessionaire 24 months after his concession period is over and for all other unsuccessful Bidders 6 months after this Contract has been awarded.

If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by Bangalore Development Authority.

Article – 10

Other Provisions.

1. This pact is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. .....
2. Changes and supplements as well as termination notices need to be made in writing.
3. If the Bidder/Contractor/Concessionaire/Authority's Engineer is a partnership or a consortium, this pact must be signed by all partners or consortium members.
4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
5. Any disputes/ differences arising between the parties with regard to term of this pact, any action taken by the Principal in accordance with this Pact or interpretation thereof shall not be subject to any Arbitration.
6. The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

In witness whereof the parties have signed and executed this Pact at the place and date first done mentioned in the presence of following witness:-

(For & On behalf of the Principal) (For & On behalf of the Bidder/ Contractor/ Concessionaire/ Authority's Engineer)

(Office Seal)

Place_____

Date_____

Witness 1 :

(Name & Address):_____

Witness 2 :

(Name & Address): _____

SECTION 5: FORMAT FOR SUBMISSION OF FINANCIAL PROPOSAL.

Appendix C-1 Financial proposal submission form

Appendix C-2 Summary of costs

Appendix C-3 Breakdown of costs

APPENDIX C-1: FINANCIALPROPOSALSUBMISSIONFORM

FROM:
(Name of Firm and Address)

To,
The Executive Engineer,
Infrastructure Division, Bangalore Development Authority
T. Chowdaiah Road, Kumara Park West, Bengaluru – 560020.

Subject:

We, the undersigned, offer to provide the consulting services for the above in accordance with your Request for Proposal dated [Date], and our proposal. Our attached financial proposal is for the sum of [Amount in words and figures]. This amount is exclusive of the local taxes which we have estimated at (Amount in Words and Figures).

Our financial proposal shall be binding upon us up to the expiration of the validity period of the proposal, i.e., [Date].

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

Commission and gratuities, if any, paid or to be paid by us to agents relating to this proposal and contract execution, if we are awarded the contract, are listed below:

Name and Address of Agents	Amount and Currency	Purpose of Commission or Gratuity
.....	.....	.....
.....	.....	.....

We understand you are not bound to accept any proposal you receive.

We remain, Yours sincerely,

Managing Director/Head of the firm/
Authorised Representative of the firm*
Name of the firm

APPENDIX C-2: SUMMARY OF COSTS

Sl No.	Description	Amount (Rs.)
I	Remuneration for Local Professional Staff	
II	Office establishment and associated charges	
III	TA & DA of PMC staff	
	Sub Total	
	Goods and Services Tax Payable in India	
	Total Costs (Including Tax)	

Note: Payments will be made as per stipulations of the Conditions of Contract.

APPENDIX C-3: BREAKDOWN OF LOCAL CURRENCY COSTS

II. REMUNERATION FOR LOCAL PROFESSIONAL STAFF

For Tunnel Project with Construction Period of 24 months

No.	Position	Name	Construction Period 24 months + DLP 60 months		
			Rate	No. of man-months*	Amount
	Professional Staff				
1.	Team Leader Cum Senior Tunnel Engineer				
2.	Tunnel Design Expert				
3.	Senior Geotechnical Engineer				
4.	Senior Electrical & Mechanical (E&M) Expert				
5.	Senior Geologist				
6.	Highway cum Pavement Engineer				
7.	Quantity Surveyor/Documentation Expert				
8.	Contract Expert				
9.	Project Associate (Resident)				
10.	Project Associates				
11.	Site Engineers				
12.	Support Staff				
13	Survey and Technology cost for Tunnel Structural Inspection				
14	Office establishment and associated charges				
15	TA & DA of PMC staff				
Total amount excluding GST					

SECTION 6: TERMS OF REFERENCE FOR AUTHORITY'S ENGINEER

[Note: The term "Agreement" and clauses thereof refer to the EPC Agreement dated----- entered between Authority and --------(the Contractor) for the work of ..... from km---- to ---- of NH No.------- in the State of ---------- on Engineering, Procurement and Construction (EPC) basis].

1. Scope

1.1 These Terms of Reference (the "TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated..... (the "Agreement"), which has been entered into between the Authority and ..... (the "Contractor") for [Two-Laning] of the **** section (km ** to km**) of Tunnel Project "CONSTRUCTION OF 3-LANE BI-DIRECTIONAL ROAD UNDERPASS ON BELLARY ROAD BETWEEN HEBBAL JUNCTION AND UNIVERSITY OF AGRICULTURE SCIENCES (UAS) STAFF QUARTERS VIA KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY (KVAFSU) CAMPUS, BENGALURU" in the State of Karnataka on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Tunnel Project.

2 Definitions and interpretation

2.1 The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be reference to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, mutatis mutandis, to this TOR.

3 General

3.1 The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

3.2 The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining.

(a) any Time Extension.

(b) Any additional cost to be paid by the Authority to the Contractor;

(c) The Termination Payment; or

3.3 Any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 50,00,000/- (Rs. Fifty Lakh.)

3.4 The Authority's Engineer shall submit regular periodic reports, once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

3.5 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2 EPC Agreement.

3.6 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

3.7 In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4. Role and responsibility of Officers of the Authority

The officer in-charge of the Authority i.e The Executive Engineer, Infrastructure Division, BDA, is responsible for the overall supervision and monitoring of the execution of project as the representative of the owner of the project. The Authority's Engineer is appointed to assist the Authority for carrying out the functions as detailed under clause 18.2 of the EPC Agreement. As such, an officer of the Authority is vested with all such powers and responsibilities as are enjoined upon the Authority's Engineer and is fully competent to issue any instructions for proper monitoring and supervision of the project, either by himself or through the Authority's Engineer. Instructions issued by the concerned officer of the Authority shall have the same effect as that of the Authority's Engineer in terms of this Agreement. Wherever such concerned officer issues any instructions or notice to the Contractor, he shall endorse a copy thereof to the Authority's Engineer.

5 Construction Period

5.1 During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geotechnical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6 of EPC Agreement. The Authority's Engineer shall complete such review and approve and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended up to 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

5.2 The Authority's Engineer shall review and approve any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings. The review/approval of drawing should be authenticated by Authority's Engineer.

5.3 Quality Assurance Manual and Plan form the basis of quality of the work. It is therefore essential that the Quality Assurance Manual and Plan prepared by the Concessionaire be checked and approved. Thus, the Authority's Engineer shall check contents of Quality Assurance Plan and Manual of Concessionaire as per requirements of Quality Management System (as per ISO 9001), IRC: SP: 47-1998 and IRC: SP: 57-2000 for road bridges and roads respectively as applicable. The Authority's Engineer shall also offer their comments for modifying/ improving the document. After receiving the corrected document, the Authority's Engineer shall review and formally approve the QAM and Quality Plan and send one copy to the Authority. The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

5.4 The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Tunnel Project related roads for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4 EPC Agreement.

5.5 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the contractor within 7 (seven) days of receipt of such report.

5.6 On a daily basis, the concerned key personnel of Authority Engineer shall inspect the Construction Works. Following activities need to be undertaken during the visits.

- Review of construction including progress, quality and safety of construction
- Inspection of defects and deficiencies in construction works.
- Witnessing quality inspection tests at labs established by Concessionaire on a sample basis Review of quality of work shall be done in reference to Quality Assurance Plan (QAP)/Manual and ISO 9001:2008, IRC: SP: 47-1998 and IRC: SP: 57-2000 for road bridges and roads respectively. The Authority's Engineer also needs to capture following documents and send to Bangalore Development Authority field office via email on a daily basis.
- Scanned copy of filled RFI (Request for Inspection) form including commentary on 'Satisfactory/Unsatisfactory' nature of work completed by Concessionaire
- Daily inspection report Proforma as provided in Annexure I
- Readings of quality inspection tests witnessed by the Consultant
- Minimum 6 high resolution photographs supporting the remarks made by the Authority's Engineer in RFI form.

- Team Leader will be responsible for sending daily emails to Bangalore Development Authority office

5.7 On a monthly basis, the Authority Engineer shall prepare a Monthly Inspection Report in accordance with the format prescribed in Annexure V setting forth an overview of the status, progress, quality and safety of construction, including the work methodology adopted, the materials used and their sources, and conformity of Construction Works with the Scope of the Project and the Specifications and Standards. In a separate section of the Inspection Report, the Authority Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in the construction of the Tunnel Project. The Authority Engineer shall send a copy of its Inspection Report to the Authority and the Concessionaire latest by 7th of every month. Key sections of the Monthly Progress Report are as follows.

S No.	**Section**	**Sub-Sections**
1	Executive Summary	1.1 Construction progress in current month
		1.2 Summary of strip plan
		1.3 Detailed strip plan
		1.4 Current issues and recommended actions by AE
2	Project Overview	2.1 Salient Features of the Project
		2.2 Project Milestones
		2.3 Location Map
		2.4 Key Plan
3	Critical issues and Action log	3.1 Pending issues and action log
		3.2 Obligations as per contract
4	Physical Progress	4.1 Detailed physical progress by component
5	Land Acquisition and Clearances	5.1 LA summary
		5.2 LA detail by CALA
		5.3 LA detail by village
		5.4 Manpower with each CALA
		5.5 Clearances summary
		5.6 Status of utility shifting
6	Change of Scope	6.1 Status of pending COS proposals
7	Mobilization of Resources	7.1 Resource mobilization by contractor/ concessionaire
8	Financial Progress Details	8.1 Pen picture- Escrow
		8.2 Escrow details
9	Summary of quality control tests	9.1 Tests witnessed by IE/AE
		9.2 Tests conducted by IE/AE
10	Monitoring of maintenance	10.1 Critical issues and action log
		10.2 Cumulative defects and deficiencies
		10.3 Status of damages

	obligations during construction phase	
11	Safety features	11.1 Pen picture on safety features at construction site
		11.2 Accident report
12	Annexures	Annex 1: Detailed list of physical components as per Schedule G
		Annex 2 onwards: Additional details provided by AE

5.8 If at any time during the Construction Period, the Authority Engineer determines that the Concessionaire has not made adequate arrangements for the safety of workers and Users in the zone of construction or that any work is being carried out in a manner that threatens the safety of the workers and the Users, it shall make a recommendation to the Authority forthwith, identifying the whole or part of the Construction Works that should be suspended for ensuring safety in respect thereof.

5.9 The Authority's Engineer shall conduct the pre-construction review of manufacturer's reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

5.10 For determining that the Works conform to Specifications and Standards, the ` Engineer shall use following equipment in carrying out the tests.

1	Surface defects of pavement	Network Survey Vehicle (NSV)
2	Roughness of pavement	Laser Profilometer
3	Strength of pavement	Falling Weight Reflectometer (FWD)
4	Road signs and road markings	Retro-reflectometer

6 Maintenance Period

6.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose witness and certify a joint monthly inspection with Contractor.

6.2 The Authority's Engineer shall undertake regular inspections, at least once every month to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

6.3 Visual Inspection of Tunnel Project

6.3.1 The Authority Engineer shall witness and certify visual inspection of entire Tunnel Project stretch as per the frequency defined in the following table

Nature of Defect or Deficiency	**Frequency of inspection**
TUNNELS	
(a) Tunnel Lining (Concrete/Shotcrete/Masonry)	
(i) Cracks, deformation, bulging, and settlement of lining	Weekly
(ii) Spalling, scaling, honeycombing, or surface deterioration	Weekly
(iii) Water seepage, leakage, damp patches, and efflorescence	Weekly
(b) Tunnel Portal Structures	
(i) Cracks, settlement, tilting, or structural damage to portal walls	Weekly
(ii) Erosion, slope instability, rock falls, or landslides near portals	Weekly
(c) Drainage System	
(i) Blockage of side drains, central drains, and drainage channels	Weekly
(ii) Accumulation of silt, debris, or standing water	Weekly
(iii) Damage to drainage pipes, culverts, and sumps	Weekly
(d) Rock Support and Ground Stabilization Systems	
(i) Loosening, corrosion, or failure of rock bolts, anchors, and mesh	Weekly
(ii) Damage to shotcrete and support ribs	Weekly
(iii) Signs of ground movement or rock dislodgement	Weekly
(e) Tunnel Pavement and Walkways	
(i) Cracks, potholes, rutting, or surface deformation of pavement	Weekly
(ii) Damage to kerbs, walkways, and maintenance paths	Weekly
(f) Ventilation System	
(i) Malfunctioning of ventilation fans and ducts	Weekly
(ii) Excessive dust, fumes, or inadequate air circulation	Weekly
(g) Electrical and Lighting Systems	
(i) Failure or damage of lighting fixtures and cables	Weekly
(ii) Damage to electrical panels, conduits, and control systems	Weekly
(h) Fire and Life Safety Systems	
(i) Malfunctioning of fire detection and suppression systems	Weekly
(ii) Damage to emergency exits, signage, and communication systems	Weekly
(i) Tunnel Monitoring and Instrumentation	
(i) Abnormal readings from settlement markers, extensometers, piezometers, and strain gauges	Weekly
(ii) Damage or malfunctioning of monitoring instruments	Weekly
(j) Other Items Relating to Tunnels	
(i) Corrosion of metallic components, brackets, and supports	Weekly
(ii) Growth of vegetation affecting portals, drains, or structures	Weekly
(iii) Accumulation of debris, waste, or obstructions within the tunnel	Weekly
(iv) Damage to protective fencing, barriers, handrails, and safety installations	Weekly
(v) Any condition affecting structural integrity, operational safety, or serviceability of the tunnel	Weekly

6.3.2 All elements which have daily inspection frequency shall be inspected weekly as well. Similarly, all elements which have weekly inspection frequency shall be inspected monthly as well.

6.3.3 Daily inspection report format and weekly inspection report format has been provided in Annexure II and III of this document respectively. Manpower which needs to conduct visual inspection and mode of reporting is defined in the following table

Frequency of inspection	Inspection to be carried out by	Mode of reporting
Daily	Sub-professional staff	Soft copy by Email
Weekly	Key personnel	Soft copy by Email
Monthly	Key personnel	Hard copy and Soft copy

High resolution photographs and video of the highway stretches having defects and/or deficiencies shall be submitted along with Weekly Inspection Report and Monthly Status Report. Summary of key observations around defects and deficiencies in highway stretch shall be reported in Monthly Progress Report and detailed inspection report shall be provided as Annexure to Monthly Progress Report.

6.3.4 The Authority's Engineer shall also be responsible for inspection and monitoring of Wayside Amenities. ETC (Electronic Toll Collection) and ATMS (Advanced Traffic Management System) and incident management.

6.4 Tunnel conditions surveys (To be carried out by contractor duly witnessed by Authority Engineer)

6.4.1 The carrying out of condition surveys will be one of the most important and crucial field tasks under the project. The Authority Engineer shall witness condition surveys using equipment and following a frequency as defined under.

S. No.	**Key Metrics of Asset**	**Equipment to be Used**	**Frequency of Condition Survey**
1	Structural condition of tunnel lining (cracks, spalling, deformation, seepage)	Tunnel Inspection Vehicle (TIV), High-Resolution Digital Camera, Crack Measurement Gauge	At least twice a year (before and after monsoon)
2	Tunnel geometry and deformation monitoring	Total Station, Laser Scanner (LiDAR), Convergence Monitoring System	At least twice a year
3	Ground movement and settlement	Extensometers, Inclinometers, Settlement Markers	At least once a year
4	Rock support system condition (rock bolts,	Visual Inspection Equipment, Pull-out	At least once a year

	anchors, wire mesh, shotcrete)	Testing Equipment, Non-Destructive Testing (NDT) Equipment	
5	Water ingress, seepage, and drainage performance	CCTV Drain Inspection System, Moisture Meter, Flow Measurement Equipment	At least twice a year (before and after monsoon)
6	Tunnel pavement condition (cracking, rutting, potholes, skid resistance)	Network Survey Vehicle (NSV), Laser Profilometer, Skid Resistance Tester	At least twice a year
7	Ventilation system performance	Air Velocity Meter, Gas Detector, Environmental Monitoring System	Quarterly
8	Lighting system performance and illumination levels	Lux Meter, Electrical Testing Equipment	Quarterly
9	Fire and Life Safety Systems (fire detection, hydrants, extinguishers, emergency communication systems)	Fire Safety Testing Equipment, Communication System Test Equipment	Quarterly
10	Electrical and Mechanical (E&M) systems	Thermal Imaging Camera, Electrical Test Instruments, SCADA Monitoring System	Quarterly
11	Tunnel portal structures, retaining walls, and slope protection works	Drone Survey, Total Station, Visual Inspection Equipment	At least twice a year (before and after monsoon)
12	Emergency exits, escape routes, and safety signage	Visual Inspection Equipment, Retro-reflectometer	At least twice a year
13	Tunnel drainage pumps and sump systems	Pump Performance Testing Equipment, Flow Meter	Quarterly
14	Corrosion assessment of metallic structures and equipment	Ultrasonic Thickness Gauge, Corrosion Monitoring Equipment	At least once a year
15	Comprehensive tunnel asset condition assessment	Integrated Tunnel Inspection Vehicle with LiDAR, CCTV, and Imaging Systems	At least once a year

The first equipment-based inspection shall be conducted at the time of completion testing. The other inspections shall be conducted before and after the rainy seasons as per the schedule defined in Annexure IV, except for FWD testing which shall be conducted once a year. Calibration of equipment, wherever needed, is required to be done in presence of Competent Authority. Once approval of equipment, the settings and a sample data set is provided by Competent Authority, network level data for entire project stretch can be collected. Month of survey for each state has been defined in Annexure IV of this document.

6.4.2 Measurement of pavement surface defects and roughness

i. The Authority Engineer shall use Network Survey Vehicles mounted with equipment such as Laser based automatic crack detection, high resolution digital cameras for RoW and pavement, high accuracy DGPS receiver and in vehicle data processing software or better technology to accurately measure following pavement surface properties

Cracking	• Length • Width • Depth
Potholes	• Area • Depth
Ravelling	• Indicator
	• % • Area
Rutting	• Depth • Width
Concrete Joint/ Faulting	• Length
Roughness	• IRI in both wheel paths

ii. The following criteria shall be met by the process of defects detection
- Measurement of 3D road profile using such technologies as laser scanning or other proven technologies.
- Ability to operate (collect data) at different speeds with a minimum speed of 30km/hr and up to at least 40-80 km/ hr.
- Profile depth accuracy of 0.5mm
- Capability for lane tracking to control driver wander' and ensure high repeatability of data between surveys.
- Measure at least 3.5m width of highway lane.
- Transverse Profile including rut depth measurement of pavement surface widths of both carriageway and shoulders. The rut depth data must be convertible to different straightedge lengths (1.8m to 3.5m) and meet industry standards (ASTM E1703 / E1703M).
- Pavement images with capability to automatically identify and rate distresses
- Roughness measurement with outputs of both raw longitudinal profiles and International Roughness Index (IRI) calculation shall be reported at least

100m referenced to the preceding Location Reference Post (LRP). The roughness must meet ASTM-E950 (equivalent to Class I road profiler). The IRI shall be determined in both wheel paths.

- Ability to record images at user-defined intervals (e.g. every 5, 10m, etc.)
- Minimum images resolution of 1600x1200
- Outputs must include Standard JPEG image or similar industry standard
- Distance resolution of <1mm,
- Capable of achieving distance accuracy of 0.1% (i.e. within 1m over 1km distance)
- All data outputs should be in a non-proprietary format (e.g. .CSV, .MDB, Excel) and not require specialist software in order to view or format data
- Data should also be capable of being easily formatted into data compatible with HDM-4

iii. The following are the set of deliverables which should be submitted after completion of survey as part of Monthly Progress Report

- Raw data generated from the equipment which are part of Network Survey covering the parameters mentioned in above table. It should also include o Survey ID, Description, Date, Lane o GPS referenced data for GIS mapping
- Video logging o Pavement imagery (AVI/JPEG) o 360 degree imagery (JPEG)
- Interpretation report covering summary of entire survey and analysis of defects and deficiencies

6.4.3 Measurement of pavement strength

(i) The Authority Engineer shall witness structural strength surveys for existing pavements using Falling Weight Deflectometer technique in accordance with the procedure given in IRC:115-2014 (Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique) and IRC: 117-2015 (Guidelines for the Structural Evaluation of Rigid Pavement by Falling Weight Deflectometer)

(ii) The interval at which deflection measurements are to be taken up are as per IRC:1152014 / IRC:117-2015. For flexible pavements, the sample size and the interval of the data to be collected depends on the length of the uniform section calculated and condition of the pavement section i.e. 'good', 'fair' and 'poor' for each lane, established on the pavement condition data based on the criterion given in IRC:115-2014. For rigid pavements, the deflection data may be collected at interiors, corners, transverse joints and longitudinal joints in the outer lanes at intervals as specified in IRC:117-2015.

(iii) The following are the set of deliverables which should be submitted after completion of inspection test as part of Monthly Progress Report

- Data report covering following parameters

(i) Deflection Bowl (Transient Deflections at seven different points)

(ii) Corrected Elastic Modulus Bituminous E1

(iii) Corrected Elastic Modulus Granular E2

(iv) Corrected Elastic Modulus Subgrade E3 o Subgrade CBR

• Interpretation report covering summary of entire survey results and analysis of key parameters

6.4.4 The Authority Engineer shall witness and certify the condition and structural assessment survey of the tunnel and its associated structures using a Tunnel Inspection Vehicle (TIV), LiDAR-based scanning system, or other equivalent or superior technologies capable of comprehensive tunnel inspection and condition monitoring.

(i) The following criteria shall be met by the tunnel condition assessment process:

- The inspection system shall provide complete access and visibility to all tunnel components, including tunnel lining, crown, side walls, invert, portals, drainage systems, ventilation systems, and emergency facilities.
- The inspection equipment shall be capable of capturing high-resolution images, videos, and three-dimensional (3D) geometric data for identification and measurement of defects.
- The system shall facilitate inspection of concealed, inaccessible, or elevated areas of the tunnel without disrupting traffic operations to the extent possible.
- Adequate safety features shall be incorporated, including dedicated power supply, emergency shutdown systems, personnel safety arrangements, and traffic management provisions during inspection.
- The equipment shall be capable of detecting and recording cracks, spalling, deformation, water ingress, seepage, corrosion, settlement, and other structural or operational deficiencies affecting tunnel safety and serviceability.

(ii) A detailed Tunnel Inspection and Condition Assessment Report shall be submitted by the Authority Engineer after each inspection. The report shall include defect mapping, photographic records, structural condition ratings, deformation measurements, drainage assessment, safety system assessment, recommendations for remedial measures, and any other information necessary for effective operation and maintenance of the tunnel.

6.4.5 Measurement of retroreflection of road signs

(i) The Authority Engineer shall measure Coefficient of retro reflected luminance R_A (night time retro reflection) of road traffic signs using a portable retro reflectometer.

(ii) The following criteria shall be met by the process of road signs retro reflection measurement

- Measurement of retro reflective signs shall be conducted in accordance with ASTM E1709 and ASTM E2540
- Measurement time after pressing trigger shall be less than or equal to 1 sec

- Observation angle adjustment from 0.2 degrees to 2.0 degrees
- Entrance angle adjustment from -45 degrees to +45 degrees
- Self-contained commercially available battery
- Inbuilt data storage of at least 2,000 measurements so that data transfer requirement is minimized while the survey is being conducted
- Interface for transferring data from device to Computer
- Built in GPS to capture GPS coordinates of road sign
- Range shall be at least 0-2000 cd/lx/m_2

(iii) The following are the set of deliverables which should be submitted after completion of survey as part of Monthly Progress Report

- System generated coefficient of retro reflected luminance RA (nighttime retro reflection) of all road signs
- Interpretation report covering analysis of road signs falling in different range of RA and actions to be taken

6.5 The Authority Engineer shall witness and certify following inspections of ETC lanes at toll plazas on a month basis if applicable:

(i) Infrastructure:

- Availability of civil infrastructure at toll plazas required for installation of ETC systems
- Adequacy of hardware, software and other related items as per IHMCL/Bangalore Development Authority technical specifications and requirements (ii) Operations:
- Adherence of various stakeholders (acquirer bank, system integrator, toll operator, issuer bank etc) of the ETC system to the service level agreements
- Efficacy of the ETC system (RFID tagging, AVC, WIM etc) in terms of accuracy and uptime
- Tracking and reporting toll plaza experience metrics such as average waiting time, transaction times for different modes of payment (RFID, cash, smart cards, QR codes etc) and congestion levels (eg. length of queue in different lanes) across 4 different times in a day
- Robustness of dispute resolution mechanisms in place for the tag holder and toll operators by the issuer and acquirer banks

6.6 The Authority Engineer shall prepare a Monthly Status Report in O&M phase of project in respect of its duties and functions under this Agreement and in accordance with the

format prescribed in Annexure VI. 1st deliverable of the report which is an executive summary to the main report (Section 1) shall be submitted to the Authority by 4th of every month. Main report (Section 2 onwards) shall be submitted to the Authority by 7th of every month. Key sections of the Monthly Status Report are as follows;

S. No.	Sections	Sub Sections
1	Executive Summary	1.1 Overall Tunnel Condition Assessment
		1.2 Key Performance and Safety Metrics
		1.3 Key Maintenance and Repair Activities Undertaken
		1.4 Critical Deficiencies and Pending Issues
		1.5 Recommendations of Authority Engineer (AE)
		1.6 Tunnel Asset Maintenance Plan and Inspection Schedule
2	Project Overview	2.1 Key Project Details
		2.2 Location Map and Tunnel Layout
		2.3 General Arrangement Drawings (GAD)
		2.4 Summary of Tunnel Features and Associated Structures
		2.5 Status of Access Roads, Portals, and Operational Areas
3	Critical Issues and Action Taken	3.1 Deficiency and Corrective Action Log
		3.2 Summary of Structural and Operational Deficiencies
		3.3 Contractor's Obligations under the Contract
		3.4 Inspection and Monitoring Schedule Compliance
4	Monthly Inspection Report	4.1 Summary of NCRs Issued
		4.2 Structural Inspection Report of Tunnel Lining and Portals
		4.3 Equipment-Based Inspection Report (LiDAR, CCTV, Laser Scanning, etc.)
		4.4 Drainage and Water Ingress Assessment Report
		4.5 Tunnel Pavement and Walkway Inspection Report
5	Monitoring of Tunnel Systems	5.1 Ventilation System Performance Report
		5.2 Lighting System Performance Report
		5.3 Fire Detection and Fire Fighting System Report
		5.4 Electrical and Mechanical (E&M) System Performance Report
		5.5 Emergency Communication and Safety System Report
6	Status of Damages and Non-Compliance	6.1 Damages for Non-Availability of Tunnel Facilities
		6.2 Damages for Breach of Maintenance Obligations
		6.3 Damages for Non-Completion of Major Maintenance Works
		6.4 Damages Due to Safety and Operational Deficiencies
7	Change of Scope Proposals	7.1 Status of Change of Scope Proposals
		7.2 Additional Safety and Improvement Works Proposed
8	Status of Pending Claims and Disputes	8.1 Status of Pending Claims and Disputes
		8.2 Contractual and Technical Issues Requiring Resolution
9		9.1 Traffic Volume and Tunnel Usage Report
		9.2 Incident and Accident Report

	Operational and Safety Reports	9.3 Details of User Complaints and Grievances
		9.4 Encroachment and Unauthorized Access Report
		9.5 Tunnel Closure and Traffic Diversion Report
		9.6 Emergency Response and Mock Drill Report
10	Annexures	Annex I – Detailed Visual Inspection Report of Tunnel and Associated Structures
		Annex II – Structural Health Monitoring (SHM) Data
		Annex III – Equipment-Based Inspection Reports
		Annex IV – Defect Mapping and Photographic Records
		Annex V onwards – Additional Details Submitted by the Authority Engineer

6.7 The Authority's Engineer shall specify the tests, if any, that the Contractor shall witness and certify, or cause to be carried out, for the purpose of determining that the Tunnel Project is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and remedial measures, if any, taken by the Contractor in this behalf.

6.8 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

6.9 The Authority's Engineer shall examine the request of the Contractor for closure of any part road and or Tunnel stretch for undertakings maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane (s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5 of EPC Agreement

7 Determination of costs and time

7.1 The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.

7.2 The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

7.3 The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5 of EPC Agreement.

8 Payments

8.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provision of Clause 10.2.4 (d) of EPC Agreement.

8.2 Authority's Engineer shall

(a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of EPC Agreement.

7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the First stage Maintenance Payment Statement from the Contractor pursuant to EPC Agreement, verify the Contractor's statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

7.4 The Authority's Engineer shall certify final payment with 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of EPC Agreement.

9 Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

10 Miscellaneous

10.1 All key personnel and sub professional staff of the Authority Engineer shall use the fingerprint based (biometric) attendance system for marking their daily attendance. Attendance shall be marked at least once a day and anytime during the day. 1 Biometric Attendance System shall be installed by the Authority Engineer at its own cost at the site office in order to facilitate the attendance marking. More systems can be installed near the Tunnel Project up to a maximum of 1 system in order to encourage frequent visits of Tunnel Project by key personnel and sub professional staff. A copy of monthly attendance records shall be attached with Monthly Status Report. Proper justification shall be provided for cases of absence of key personnel/ sub professional staff which do not have prior approval from Project Director of concerned stretch

10.2 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

10.3 The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as – built' Drawings and keep them in its safe custody.

10.4 Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as built Drawings in 2 (two) hard copies and in micro film

form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of project Facilities; and shall hand them over to the Authority against receipt thereof.

10.5 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

10.6 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

11. PERFORMANCE CLAUSE

Authority's Engineers shall be expected to fully comply with all the provisions of the `Terms of Reference', and shall be fully responsible for supervising the Designs, Construction and maintenance and operation of the facility takes place in accordance with the provisions of the EPC Agreement and other schedules. Any failure of the Authority Engineer in notifying to Employer and the Contractor on non-compliance of the provisions of the EPC Contract Agreement and other schedules by the EPC Contractor, non-adherence to the provision of ToR and non-adherence to the time schedule prescribed under ToR shall amount to non-performance.

The Authority Engineer shall appoint its authorized representative, who shall issue on behalf of the AE, Completion Certificate along with the Team Leader and shall witness and certify any such task as may be decided by Employer. The AE shall take prior approval of Employer before issuing Completion Certificate. The proposal submitted shall also include the name of the authorized representative along with the authorization letter and power of attorney.

12. CONSULTANT'S PROPOSAL

12.1 List of key personnel to be fielded by the Consultants shall be as below:

Standalone Tunnel Project:

Sr. No	Key Personnel
1	Team Leader Cum Senior Tunnel Engineer
2	Tunnel Design Expert
3	Senior Geotechnical Engineer
4	Senior Electrical & Mechanical (E&M) Expert
5	Senior Geologist
6	Highway cum Pavement Engineer
7	Quantity Surveyor/Documentation Expert
8	Contract Expert
9	Project Associate (Resident)
10	Project Associates

11	Site Engineers
12	Support Staff

12.2 Broad job-description and minimum qualification for key personnel mentioned above is enclosed as Enclosure–B. However, higher marks shall be accorded to the Candidate with higher relevant qualification and experience. All the CV's of the personals mentioned in Para5.3 (iii) of Data Sheet shall be evaluated at the time of evaluation of technical proposal. The age of the Key Personnel should not be more than 65 years on the date of submission of proposal. Consultants are advised in their own interest to frame the technical proposal in an objective manner as far as possible so that these could be properly assessed in respect of points to be given as part of evaluation criteria. The bio-data of the key personnel should be signed on every sheet by the personnel concerned and the last sheet of each bio-data should also be signed by the authorised signatory for the Consultant. The key personnel shall also certify at the end of their biodata proforma that they have not left any of the Employer works without completing of their assignment and have not accepted any other offer at the time of signing of the bio-data and as such shall be available to work with the Authority Engineer, if the Project is awarded. In case the key personnel leaves the assignment without approval of Employer, Employer would beat liberty to take any appropriate action against those key personnel including debarment.

12.3 In addition to above, consultants are required to propose other key personnel, sub-professional staff and other field engineers as detailed in Enclosure-A and the minimum qualification requirements for the same is enclosed in Enclosure–B.

13. PERIOD OF SERVICES

13.1 The services of an Authority's Engineer will be in phases as per Contract Agreement.

13.1.1 The appointment of the Authority's Engineer shall initially be as per details given below.

Period of service (in months)	Construction period (in months)	Maintenance/ DLP Period (in months)
Construction Period + DLP Period as per Civil Contract Agreement	___	DLP Period as per Civil Contract Agreement

The proposed manpower deployment for this period shall be matching the activities to be performed during the said period. The time frame for services during the deployment of key personnel during this period shall be as shown in Enclosure A. Extension of Time for providing services of the Authority's Engineer may be extended concurrently with the Extension of Time granted, if any, to the EPC Contractor for the project, subject to satisfactory performance of the Authority's Engineer.

14. Project Coordinator

The Firm shall appoint a personnel from its head office to act as Project Coordinator for the assignment. He will be authorised to communicate with the Authority in respect of all matters pertaining to the project. The cost of the Project Coordinator shall be incidental to the Consultancy Assignment.

Enclosure-A

MAN - MONTHS INPUT FOR KEY PROFESSIONAL STAFF AUTHORITY ENGINEER

Standalone Tunnel Project

Sr. No	Key Personnel	Exp. Years	Interim inputs months	Full Inputs months	Total inputs months	Req. Nos
1	Team Leader Cum Senior Tunnel Engineer	20		30	30	1
2	Tunnel Design Expert	15	12		12	1
3	Senior Geotechnical Engineer	15	18		18	1
4	Senior Electrical & Mechanical (E&M) Expert	15	12		12	1
5	Senior Geologist	15	12		12	1
6	Highway cum Pavement Engineer	15		30	30	1
7	Quantity Surveyor/Documentation Expert	10		24	24	1
8	Contract Expert	10		24	24	1
9	Project Associate (Resident)	10		84	84	1
10	Project Associates	10		48	48	1
11	Site Engineers	8		30	30	4
12	Support Staff	5		30	30	2
Total			**66**	**264**	**354**	**19**

Note: The number of key personnel may be modified as per the requirement with the approval of Competent Authority.

Enclosure-B

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
1.	Team Leader cum Senior Tunnel Expert	65 Years	Graduate in Civil Engineering/Tunnel Engineering/Mining Engineering or Post Graduate in Civil Engineering/Tunnel Engineering/Mining Engineering	20 Years	• 5 years of experience as Team Leader/Project Manager of construction, or construction supervision of major tunnel projects in Road, Rail, or Metro sectors. • Professional experience in planning, design coordination, execution, monitoring, and management of major tunnel projects involving underground infrastructure works in Road, Rail, or Metro sectors.	• The Team Leader cum Senior Tunnel Expert shall provide overall technical leadership for planning, execution, supervision, and monitoring of tunnel project. The expert shall ensure that all tunnelling activities are carried out in accordance with approved standards, specifications, safety norms, and project requirements. • The Team Leader cum Senior Tunnel Expert shall review geological, geotechnical, hydrological, and survey investigation reports and recommend suitable tunneling methodologies, excavation sequences, and support systems based on site conditions. The Team Leader cum Senior Tunnel Expert shall also advise on mitigation measures for adverse ground conditions. • The Team Leader cum Senior Tunnel Expert shall supervise tunnel construction activities including excavation, primary support installation, rock bolting, shotcreting, waterproofing, lining works, and finishing works. All works shall be monitored to ensure compliance with approved drawings and technical specifications. • The Team Leader cum Senior Tunnel Expert shall monitor project progress, construction schedules, deployment of manpower and machinery, and achievement of project milestones. Necessary corrective measures and

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
					• Experience in construction supervision, quality control, safety monitoring, and contract management of major tunnel construction projects in Road, Rail, or Metro sectors.	recommendations shall be provided to avoid delays and ensure timely completion of tunnel works. • The Team Leader cum Senior Tunnel Expert shall ensure implementation of stringent safety standards during tunneling operations including blasting activities, ventilation systems, confined space working, fire protection, emergency evacuation systems, and worker safety measures in accordance with applicable regulations. • The Team Leader cum Senior Tunnel Expert shall review and monitor instrumentation and geotechnical observations including convergence monitoring, settlement monitoring, deformation studies, groundwater behaviour, and stress measurements to assess tunnel stability and structural safety. • The Team Leader cum Senior Tunnel Expert shall assist in preparation and implementation of Project Monitoring Consultancy (PMC) systems for tunnel projects, including preparation of supervision methodologies, reporting frameworks, quality assurance procedures, risk management systems, and monitoring mechanisms. • The Team Leader cum Senior Tunnel Expert shall coordinate with Project Authority, contractors, consultants, design teams, geologists, project authorities, and other stakeholders for resolution of technical issues, review meetings, design modifications, and implementation challenges during tunnel construction. • The Team Leader cum Senior Tunnel Expert shall evaluate contractor methodologies, claims, variation proposals, extension of time requests, and construction sequences related to tunnel works. Recommendations shall be provided

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						to the Employer for effective contract administration and dispute resolution. • The expert shall prepare and submit periodic technical reports, progress assessments, safety audit reports, quality review reports, and recommendations for improving project efficiency, construction quality, safety performance, and overall tunnel project management.
2.	Tunnel Design Expert	60 Years	Degree in Civil/ Mining Engineering or Post Graduation in Design/ Structural Engineering or equivalent.	15 Years	• At least 10 years of professional Experience as Tunnel Design Engineer (Structural) • Experience as Tunnel Design Engineer (Structural) of major tunnel construction/construction supervision projects (Road/Rail/Metro).	• The Tunnel Design Expert shall be responsible for planning, analysis, and design of tunnel project structures in accordance with applicable national and international standards, codes, and best engineering practices and also as per the provision of defined scope of work in the contract agreement. • The expert shall review geological, geotechnical, hydrological, and topographical investigation data and recommend suitable tunnel alignment, excavation methodology, and structural support systems based on site conditions. • The expert shall prepare and review conceptual designs, preliminary designs, detailed engineering designs, and Good for Construction (GFC) drawings for tunnel works and associated underground structures. • The expert shall witness and certify design of tunnel support systems including rock bolts, shotcrete, steel ribs, lattice girders, waterproofing systems, invert structures, and final lining arrangements if any as applicable.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• The expert shall evaluate and recommend suitable tunneling methods such as NATM, TBM, Cut-and-Cover, Drill and Blast, or other appropriate methodologies depending on geological and project requirements. • The expert shall undertake structural analysis and stability assessment of tunnels under varying loading conditions including rock pressure, groundwater pressure, seismic loads, surcharge loads, and operational loads. • The expert shall review tunnel portal designs, cross passages, ventilation shafts, adits, escape routes, drainage systems, and ancillary underground structures to ensure operational safety and functionality. • The expert shall coordinate with geologists, geotechnical engineers, structural engineers, MEP consultants, safety experts, and other multidisciplinary teams for integrated tunnel design development. • The expert shall review construction methodologies and provide design-related technical support during excavation, support installation, lining works, and other construction activities. • The expert shall assess and recommend mitigation measures for difficult geological conditions such as fault zones, water ingress, squeezing ground, rock bursts, and unstable strata encountered during tunneling operations.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• The expert shall review and validate tunnel instrumentation plans including convergence monitoring, settlement monitoring, stress measurements, deformation studies, and geotechnical monitoring systems. • The expert shall ensure that all tunnel designs comply with safety standards, fire and life safety requirements, ventilation criteria, environmental regulations, and operational performance requirements. • The expert shall assist in preparation and review of DPRs, feasibility studies, bid documents, technical specifications, design reports, BOQs, and contract documentation related to tunnel works. • The expert shall participate in technical review meetings, site inspections, design coordination meetings, and provide expert recommendations for resolution of design and construction issues. • The expert shall prepare technical notes, design calculations, design review reports, value engineering recommendations, and periodic progress reports related to tunnel design activities.
3.	Senior Geotechnical Engineer	60 Years	Civil Engineering/Mining Engineering / Engineering Geology or Geotechnical	15 Years	• At least 5 years of Professional Experience as Senior Geotechnical	• To review and analyze geological, geotechnical, geophysical, and hydrological investigation reports related to the project area and provide technical recommendations for design and construction activities.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
			Engineering /Foundation Engineering/Rock Mechanics/Geoscience or equivalent		Engineer for Tunnel related projects. • Experience as a Geotechnical Engineer or similar capacity in major tunnel construction/construction supervision projects (Road/Rail/Metro)	• To plan, supervise, and monitor geotechnical investigations including borehole drilling, rock and soil sampling, laboratory testing, field testing, and interpretation of subsurface conditions. • To assess soil and rock characteristics, slope stability, groundwater conditions, fault zones, shear zones, and other geological features affecting the project. • To provide recommendations for tunnel excavation methodologies, foundation systems, slope stabilization measures, retaining structures, and ground improvement techniques. • To review and approve geotechnical design parameters for tunnels, embankments, cuttings, retaining walls, bridges, pavements, and other civil structures. • To evaluate geotechnical risks associated with tunneling and underground construction activities including rock bursts, squeezing ground, water ingress, settlement, and unstable strata conditions. • To supervise and monitor geotechnical instrumentation systems including settlement markers, inclinometers, piezometers, strain gauges, convergence monitoring, and deformation monitoring systems.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To provide technical guidance on implementation of support systems such as rock bolts, shotcrete, steel ribs, anchors, soil nailing, grouting, and other stabilization measures. • To coordinate with design consultants, tunnel experts, structural engineers, survey teams, and construction personnel for resolving geotechnical and geological issues during execution. • To review contractor's construction methodologies, excavation sequences, blasting patterns, support installation procedures, and dewatering arrangements from geotechnical perspective. • To conduct regular site inspections and monitor ground behavior, excavation stability, settlement trends, and safety conditions during construction activities. • To prepare geotechnical reports, interpretation reports, stability assessments, risk analysis reports, and technical recommendations for project implementation and decision-making. • To ensure compliance with applicable geotechnical standards, IRC guidelines, IS Codes, tunneling practices, and project specifications. • To assist the Employer in technical evaluation, dispute resolution, variation assessments, and review of claims related to geotechnical and tunneling issues.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To recommend corrective and preventive measures in case of adverse ground conditions, excessive deformation, slope failures, or other geotechnical problems encountered during project execution.
4.	Senior Geologist	60 Years	Post Graduate Degree in Geology/Related field. Or Phd in Geology/Related fields.	15 Years	• He should have a minimum 10 years of professional experience and should have involved in Project Monitoring consultancy Tunnel Design for at least two major Tunnel projects. • He should have experience in similar capacity per five years on Design/ Construction/ Supervision of Tunnel Projects.	• witness and certify and supervise geological investigations of Tunnel projects and provide geological assessments for project planning and execution. • To study and interpret geological formations, rock types, soil conditions, fault zones, shear zones, joints, fractures, and other subsurface features affecting the project. • To conduct geological mapping, face mapping, and subsurface investigations for tunnel and underground construction works. • To review and interpret borehole data, core logs, geological reports, laboratory test results, and geotechnical investigation findings. • To assess geological risks associated with tunnel excavation, slope stability, foundation conditions, groundwater ingress, and unstable strata. • To provide recommendations on tunnel alignment, excavation methodology, support systems, slope stabilization measures, and ground treatment techniques based on geological conditions.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To monitor geological conditions encountered during excavation and construction activities and recommend suitable corrective and preventive measures. • To coordinate with geotechnical engineers, geophysicists, tunnel experts, design consultants, and construction teams for resolving geological issues during project implementation. • To supervise geological logging, rock mass classification, and assessment of ground behavior during tunneling and underground construction activities. • To identify and assess potential hazards such as rock falls, landslides, water seepage, cavities, weak rock zones, and unstable formations affecting project safety and stability. • To review contractor's excavation methods, blasting operations, support installation procedures, and geological observations during construction. • To monitor groundwater conditions, seepage patterns, and hydrogeological behavior affecting tunnels, slopes, foundations, and underground structures. • To prepare geological reports, geological profiles, hazard assessment reports, rock mass characterization reports, and technical recommendations for project authorities. • To ensure compliance with applicable geological investigation standards, IRC guidelines, IS Codes, tunneling practices, and project specifications.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To participate in site inspections, technical review meetings, construction monitoring activities, and provide expert geological advice for safe and efficient project execution.
5.	Senior Electrical & Mechanical (E&M) Expert	60 Years	Degree in Electrical/Mechanical Engineering. Or Post Graduation in Degree in Electrical/Mech Engineering.	15 Years	• 10 years in Tunnel Projects and should have worked for at least five years as an E&M Expert for Tunnel Design/ Construction projects. • He should have handled at least two tunneling projects in similar capacity.	• To plan, review, and supervise electrical and mechanical systems associated Tunnel and underground infrastructure projects in accordance with applicable standards and specifications. • To review and approve design, installation, testing, and commissioning of electrical and mechanical systems including power supply systems, lighting systems, ventilation systems, pumping systems, and emergency backup systems. • To supervise installation and operation of tunnel ventilation systems, smoke extraction systems, fire detection and suppression systems, and emergency response systems for tunnel safety. • To monitor electrical distribution systems, transformers, substations, DG sets, UPS systems, control panels, SCADA systems, and associated electrical infrastructure. • To review mechanical systems including HVAC systems, drainage and pumping arrangements, compressed air systems, lifting equipment, and electromechanical installations required for tunnel and infrastructure projects. • To ensure compliance with applicable electrical safety standards, fire safety requirements, energy efficiency norms,

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						and operational performance criteria during construction and commissioning activities. • To coordinate with civil, structural, tunnel, and safety teams for integration of electrical and mechanical systems with overall project design and construction requirements. • To review contractor's drawings, technical specifications, material approvals, testing procedures, operation manuals, and maintenance plans related to electrical and mechanical works. • To supervise testing, commissioning, trial runs, and performance evaluation of all electrical and mechanical systems prior to project completion and handover. • To monitor safety measures related to electrical installations, confined space operations, ventilation equipment, fire protection systems, and mechanical operations during construction activities. • To assess and recommend corrective measures for operational issues, equipment failures, power supply interruptions, ventilation deficiencies, and system integration problems. • To conduct inspections, quality checks, and compliance reviews of electrical and mechanical works to ensure adherence to approved standards and project specifications. • To prepare technical reports, inspection reports, commissioning reports, maintenance recommendations, and progress reports related to electrical and mechanical systems.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To assist the Employer in technical evaluation of bids, review of variation proposals, dispute resolution, and assessment of contractor performance related to electrical and mechanical works. • To ensure proper operation, reliability, maintainability, and safety of all electrical and mechanical systems throughout the construction and operational phases of the project.
6.	Highway cum pavement Engineer	50 years	Bachelor's Degree in Civil Engineering with specialization or Master's Degree in Highway Engineering/Transportation Engineering/Pavement Engineering from a recognized University.	15 Years	• Working experience in large Civil Infrastructure Projects such as Tunnel or highway Projects.	• To plan, review, and supervise highway engineering works related to Tunnel Project and associated infrastructure projects in accordance with approved standards, specifications, and project requirements. • To review highway alignment, geometric design, pavement design, drainage systems, intersections, and road safety features to ensure compliance with IRC, MORTH, and applicable engineering standards. • To supervise construction activities related to earthwork, embankment formation, subgrade preparation, granular layers, pavement works, shoulders, and roadside development works. • To monitor quality control and quality assurance activities for highway construction materials and ensure compliance with approved specifications and testing requirements. • To review and verify contractor's construction methodologies, work programs, machinery deployment, and resource planning related to highway works.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To monitor project progress, construction schedules, and achievement of milestones and recommend corrective measures for delays and non-performance. • To supervise pavement works including flexible pavements, rigid pavements, bituminous layers, concrete works, and pavement rehabilitation activities. • To review and monitor highway drainage systems including cross drainage structures, side drains, culverts, storm water systems, and erosion control measures. • To ensure implementation of road safety measures including traffic management plans, safety signage, crash barriers, road markings, illumination systems, and work zone safety arrangements. • To coordinate with design consultants, contractors, utility agencies, project authorities, and other stakeholders for resolution of technical and site-related issues. • To inspect and certify completed works, measurements, material usage, interim payment certificates, and compliance with contractual obligations. • To monitor environmental protection measures related to highway construction including dust control, muck disposal, slope stabilization, and restoration of affected areas.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To review as-built drawings, technical reports, progress reports, quality reports, and documentation related to highway engineering works. • To assist the Employer in technical evaluation, contract administration, variation assessments, claim review, and dispute resolution related to highway projects. • To ensure that all highway works are executed safely, efficiently, and in compliance with approved designs, technical specifications, and project timelines.
7.	Quantity Surveyor/ Documentation Expert	50 years	Bachelor's Degree or Diploma in Civil Engineering/Quantity Surveying/Construction Management or equivalent qualification from a recognized Institution.	15 Years	• Working experience in large Civil Infrastructure Projects such as Tunnel, Roads, Railways and Metro.	• To prepare, review, and verify quantity estimates, Bills of Quantities (BOQ), cost estimates, and quantity calculations for various components of the project in accordance with approved drawings and specifications. • To monitor measurements and quantities executed at site and ensure accuracy of quantity records, measurement books, and billing documentation. • To verify contractor's running account bills, interim payment certificates, final bills, and supporting documents as per contract provisions and actual work executed. • To maintain proper documentation related to project quantities, variations, extra items, deviations, and change orders during project implementation.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To assist in preparation and review of tender documents, technical specifications, contract documents, schedules of quantities, and cost analysis statements. • To monitor project costs, expenditure trends, material consumption, and financial progress and provide recommendations for effective cost control and budget management. • To review and assess contractor's claims, rate analysis, escalation claims, variation proposals, and extension of time submissions related to quantity and cost matters. • To coordinate with design consultants, site engineers, contractors, and project authorities for reconciliation of quantities, drawings, and contract provisions. • To prepare and maintain project documentation including progress reports, quantity statements, payment records, correspondence files, and contract administration records. • To ensure proper filing, indexing, and record management of technical documents, drawings, approvals, reports, and contractual communications related to the project. • To assist in preparation of project status reports, financial progress reports, cost comparison statements, and audit-related documentation.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To monitor compliance with contractual provisions, payment procedures, and documentation requirements during execution of the project. • To verify as-built quantities, completion statements, and final reconciliation of project quantities upon completion of works. • To support the Employer in dispute resolution, arbitration matters, audit reviews, and verification of contractual and financial records related to the project. • To ensure accuracy, transparency, and proper maintenance of all quantity surveying and project documentation activities in accordance with project requirements and applicable standards.
8.	Project Associates	40 years	Bachelor's Degree in Civil Engineering/ Architecture/ Planning/ Project Management/ Environmental Science or relevant discipline from a recognized University.	10 Years	• Working experience in large Civil Infrastructure Projects such as Tunnel, Roads, Railways and Metro.	• o assist the Project Management Team in coordination, monitoring, and implementation of various project activities in accordance with project objectives and timelines. • To support preparation, compilation, and maintenance of project reports, progress reports, presentations, meeting minutes, and technical documentation related to the project. • To coordinate with consultants, contractors, government departments, field teams, and other stakeholders for collection and dissemination of project-related information.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To assist in monitoring project schedules, milestones, deliverables, and progress of various components of the project and report any delays or issues to the concerned authorities. • To maintain proper records of drawings, technical documents, correspondence, approvals, reports, and contractual communications related to the project. • To assist in data collection, data analysis, project tracking, and preparation of status updates for review by the Employer and project authorities. • To support procurement, tendering, contract management, and administrative activities associated with project implementation. • To coordinate and facilitate meetings, site visits, inspections, workshops, and stakeholder consultations related to the project. • To assist in preparation of compliance reports, financial records, monitoring statements, and documentation required for audits and reviews. • To support field supervision teams in collection of site information, measurements, photographic records, and project monitoring activities. • To ensure proper filing, indexing, digital record management, and retrieval of project documents and data for smooth project administration.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To assist in preparation of presentations, briefing notes, technical summaries, and communication materials for project review meetings and decision-making processes. • To monitor correspondence and follow-up actions related to project approvals, permissions, and submissions to various authorities. • To provide logistical, technical, and administrative support to project experts, engineers, and management personnel during project execution. • To perform any other project-related tasks assigned by the Team Leader/Project Manager for effective implementation and coordination of project activities.
9.	Site Engineers	40 years	Bachelor's Degree or Diploma in Civil Engineering from a recognized University/Institution.	8 Years	• Working experience in large Civil Infrastructure Projects such as Tunnel, Roads, Railways and Metro.	• To supervise day-to-day construction activities at site and ensure execution of works in accordance with approved drawings, technical specifications, and contract provisions. • To monitor construction progress, work schedules, manpower deployment, machinery utilization, and material availability for timely completion of project activities. • To inspect and verify setting out works, levels, alignments, dimensions, and quality of construction works executed at site. • To ensure implementation of quality control and quality assurance procedures for all construction activities and materials used in the project.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To coordinate with contractors, consultants, survey teams, laboratory personnel, and project authorities for smooth execution of site works. • To supervise earthwork, structural works, pavement works, tunnel works, drainage works, utility works, and other civil engineering activities as applicable to the project. • To monitor compliance with safety standards, environmental protection measures, traffic management plans, and occupational health requirements at site. • To maintain daily site records, measurement books, work progress reports, inspection reports, and site documentation related to construction activities. • To verify contractor's work methodologies, material usage, construction practices, and workmanship for compliance with approved standards and specifications. • To identify site-related issues, technical problems, delays, and non-conformities and report the same to senior project authorities along with recommendations for corrective measures. • To assist in quantity measurements, verification of contractor bills, preparation of progress statements, and certification of completed works.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To conduct site inspections, testing coordination, joint measurements, and quality checks during execution of various construction activities. • To coordinate with utility agencies, local authorities, and stakeholders for resolving site constraints and facilitating uninterrupted project execution. • To assist in preparation of as-built drawings, completion reports, photographic documentation, and project handover records. • To ensure that all construction works are executed safely, efficiently, and in compliance with approved project schedules, technical specifications, and applicable standards.
10.	Support Staff	40 years	EEQ- Graduate in any degree. DEQ-Masters in any degree	5 Years	• working experience in government offices/ as consultant in government office.	• The personnel shall have experience in working with Government Departments/Agencies or as a Consultant providing services to Government organizations. The roles and responsibilities shall include: • • Coordinating with Government authorities, departments, and statutory agencies for project implementation, approvals, clearances, and compliance requirements. • Providing technical assistance and advisory support to Government officials in planning, execution, monitoring, and management of projects.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• Assisting in preparation, review, and finalization of technical documents, reports, estimates, tender documents, contract documents, and project-related submissions. • Monitoring project progress, reviewing contractor/consultant performance, and providing recommendations for timely completion of works. • Supporting Government authorities in contract administration, including review of contractual issues, variations, claims, extension of time, and compliance with contract conditions. • Coordinating with multiple stakeholders including Government departments, contractors, consultants, and other agencies for effective project delivery. • Assisting in quality assurance, inspection, supervision, and evaluation of project activities as per applicable standards and specifications. • Preparing and reviewing correspondence, progress reports, meeting minutes, and technical notes for submission to Government authorities. • Ensuring compliance with applicable Government rules, procedures, guidelines, and statutory requirements during project execution.

Sl No.	Key Positions	Age Limit	Educational Qualification	Total years of Experience	Essential Experience	Roles and Responsibilities
						• To assist in travel arrangements, logistics coordination, and accommodation arrangements for project officials and experts whenever required. • To perform any other administrative or project-related duties assigned by the Team Leader, Project Manager, or senior project officials for effective implementation of project activities.

Annexure I- Daily Inspection Report in construction period

Component	**Item Description**	**Description of Inspection Work Carried Out**	**Results of Tests/Monitoring Conducted (Test Conducted, Pass/Fail)**	**Name of Key Personnel Inspecting the Work**
1. Tunnel Excavation and Ground Support Works	Excavation Profile, Rock Classification, Rock Bolts, Anchors, Lattice Girders, Wire Mesh, Shotcrete			
2. Tunnel Lining Works	PCC, RCC Lining, Waterproofing Membrane, Final Concrete Lining, Expansion Joints			
3. Tunnel Portals and Approach Structures	Portal Structures, Retaining Walls, Slope Protection Works, Approach Roads			
4. Tunnel Drainage System	Longitudinal Drains, Cross Drains, Central Drain, Sumps, Pumping Arrangements			
5. Tunnel Pavement and Walkways	Subgrade, GSB, WMM, DBM, BC, Rigid Pavement, Kerbs, Maintenance Walkways			
6. Ventilation System	Jet Fans, Axial Fans, Ventilation Ducts, Air Quality Monitoring Equipment			
7. Electrical Systems	HT/LT Panels, Transformers, DG Sets, UPS Systems, Power Supply Network			
8. Tunnel Lighting System	Entrance Lighting, Interior Lighting, Emergency Lighting, Control Systems			
9. Fire and Life Safety Systems	Fire Detection System, Hydrant Network, Fire Extinguishers, Emergency			

	Telephones, Public Address System			
10. Monitoring and Instrumentation	Convergence Monitoring, Settlement Markers, Extensometers, Inclinometers, Piezometers, Crack Monitoring Gauges			
11. Tunnel Safety and Traffic Management Systems	CCTV Surveillance, Variable Message Signs (VMS), Traffic Signals, Emergency Signage, Incident Detection Systems			
12. SCADA and Control Systems	Central Control System, SCADA Equipment, Communication Network, Data Acquisition Systems			
13. Waterproofing and Seepage Control Works	Waterproofing Membrane, Drainage Mats, Grouting Works, Leakage Treatment Measures			
14. Other Associated Works	Utility Ducts, Cable Trenches, Service Buildings, Emergency Exits, Escape Passages			

Annexure II- Daily Inspection Report in O&M period

Nature of Defect / Deficiency	**Defect Found (Yes/No)**	**If Defect Found, Location / Chainage / Tunnel Section**	**Compliance of Previous Defect (Yes/No/NA)**	**AE Remarks**
TUNNEL STRUCTURE				
Cracks in tunnel lining (crown, walls, invert)				
Spalling, scaling or delamination of concrete lining				

Water seepage, leakage, damp patches or efflorescence				
Deformation, settlement or displacement of tunnel lining				
Damage to expansion/construction joints				
TUNNEL PORTALS AND APPROACHES				
Cracks, settlement or damage to portal structures				
Slope instability, rockfall or erosion near portals				
Damage to retaining walls and protection works				
Obstruction or deterioration of approach roads				
DRAINAGE SYSTEM				
Blockage of tunnel drains, cross drains or sumps				
Water accumulation within tunnel carriageway or walkways				
Malfunctioning of drainage pumps and associated equipment				
TUNNEL PAVEMENT AND WALKWAYS				
Potholes, rutting, cracking or surface deterioration				
Damage to kerbs, walkways and maintenance paths				
Debris, oil spills or obstructions on carriageway				
VENTILATION SYSTEM				
Failure or malfunctioning of ventilation fans				
Excessive dust, smoke or poor air quality				
Damage to ventilation ducts and control systems				
LIGHTING SYSTEM				
Failure of tunnel lighting fixtures				
Inadequate illumination levels				
Malfunctioning of emergency lighting system				

FIRE & LIFE SAFETY SYSTEMS				
Failure of fire detection and alarm systems				
Damage to hydrants, extinguishers and suppression systems				
Obstruction of emergency exits and escape routes				
Defective emergency communication systems				
ELECTRICAL & MECHANICAL SYSTEMS				
Failure of power supply, DG sets or UPS systems				
Damage to electrical panels, cables or transformers				
Malfunctioning of SCADA and control systems				
TRAFFIC MANAGEMENT & SAFETY SYSTEMS				
Failure of CCTV surveillance system				
Malfunctioning of Variable Message Signs (VMS)				
Damage to traffic signs, road markings and delineators				
Failure of incident detection and monitoring systems				
MONITORING & INSTRUMENTATION				
Abnormal readings from settlement, convergence or deformation monitoring instruments				
Damage or malfunctioning of monitoring equipment				
HOUSEKEEPING & OTHER FACILITIES				
Accumulation of debris, waste or unauthorized materials				
Damage to service buildings and utility installations				
Unauthorized access, encroachments or security breaches				
Any other condition affecting tunnel safety, operation or serviceability				

Annexure III- Weekly Inspection Report in O&M period

Nature of Defect or Deficiency	Defect Found (Yes/No)	If Defect Found, Tunnel Chainage / Location	Compliance of Previous Defect (Yes/No/NA)	AE Remarks
TUNNEL PAVEMENT AND CARRIAGEWAY				
(a) Carriageway within Tunnel				
(i) Breach, blockage or obstruction to traffic movement				
(ii) Roughness value exceeding specified limits				
(iii) Potholes				
(iv) Cracking of pavement surface exceeding 5% of area				
(v) Rutting exceeding 10 mm				
(vi) Bleeding or skidding of pavement surface				
(vii) Ravelling or stripping of bituminous surface				
(viii) Damage to pavement edges, kerbs and walkways				
(ix) Accumulation of debris, oil spills or foreign materials				
TUNNEL LINING AND STRUCTURAL ELEMENTS				
(a) Tunnel Lining				
(i) Cracks in tunnel crown, walls or invert				
(ii) Spalling, scaling or delamination of concrete lining				
(iii) Water seepage, leakage or damp patches				
(iv) Deformation, settlement or displacement of lining				

(v) Damage to expansion/construction joints				
(b) Tunnel Portals and Approach Structures				
(i) Cracks, settlement or tilting of portal structures				
(ii) Damage to retaining walls and slope protection works				
(iii) Rockfall, landslide or erosion near tunnel portals				
DRAINAGE SYSTEM				
(i) Blockage or silting of side drains and central drains				
(ii) Water accumulation on carriageway or walkways				
(iii) Malfunctioning of sump pumps and drainage equipment				
(iv) Damage to drainage channels, gratings and manholes				
VENTILATION SYSTEM				
(i) Failure of ventilation fans or jet fans				
(ii) Inadequate air circulation or excessive pollutant levels				
(iii) Damage to ventilation ducts and control systems				
LIGHTING SYSTEM				
(i) Failure of tunnel lighting fixtures				
(ii) Inadequate illumination levels				
(iii) Failure of emergency lighting systems				
FIRE AND LIFE SAFETY SYSTEMS				
(i) Failure of fire detection and alarm systems				

(ii) Damage to hydrants, extinguishers and fire-fighting equipment				
(iii) Obstruction of emergency exits and escape routes				
(iv) Failure of emergency communication systems				
ELECTRICAL AND MECHANICAL SYSTEMS				
(i) Failure of power supply systems, transformers, UPS or DG sets				
(ii) Damage to electrical panels, cables and switchgear				
(iii) Failure of SCADA and tunnel control systems				
TRAFFIC MANAGEMENT AND SAFETY SYSTEMS				
(i) Failure of CCTV surveillance system				
(ii) Failure of Variable Message Signs (VMS)				
(iii) Damage to traffic signs, delineators and pavement markings				
(iv) Failure of automatic incident detection systems				
LANDSCAPING AND VEGETATION CONTROL				
(i) Vegetation affecting tunnel portals, drainage systems or visibility				
(ii) Deterioration of landscaping and plantation works				
SERVICE BUILDINGS AND ANCILLARY FACILITIES				
(i) Defects in electrical, water supply and sanitary installations				
(ii) Damage to control rooms, service buildings				

and maintenance facilities				
(iii) Poor housekeeping and cleanliness				
OTHER PROJECT FACILITIES				
(i) Damage to approach roads and associated structures				
(ii) Damage to emergency lay-bys, cross-passages and escape routes				
(iii) Unauthorized access, encroachments or security breaches				
(iv) Any condition adversely affecting tunnel safety, operation or serviceability				

Annexure IV- Month of survey for equipment based road condition assessment

Equipment-Based Tunnel Inspection Schedule

The Authority Engineer shall witness and certify equipment-based inspection and condition assessment of the Tunnel and associated facilities at least twice every year using appropriate inspection technologies such as LiDAR Scanning Systems, Tunnel Inspection Vehicles (TIV), Laser Profilometers, CCTV Inspection Systems, Crack Mapping Systems, Environmental Monitoring Equipment, and other approved technologies.

The inspections shall generally be conducted once before the monsoon season and once after the monsoon season, as per the survey months specified for the State in which the Tunnel Project is located.

However, since the first equipment-based inspection shall be conducted at the time of Completion Testing, the following modification to the inspection schedule shall apply:

For example, where the majority length of the Tunnel Project (>50%) is located in a State where the prescribed inspection months are April and November, and Completion Testing is conducted in March, then the first equipment-based inspection conducted during Completion Testing in March shall be deemed to satisfy the inspection requirement for April. The subsequent inspections shall be conducted in November, April, November, and so on.

For structural health monitoring and tunnel geometry surveys using LiDAR, laser scanning, convergence monitoring, deformation monitoring, and pavement structural evaluation, the first survey shall be conducted during Completion Testing. Thereafter, such surveys shall be carried out annually or at such intervals as specified in the Contract Requirements.

The Authority Engineer shall ensure that each equipment-based inspection covers, at a minimum, the following components:

1. Tunnel Pavement and Carriageway Condition.
2. Tunnel Lining, Crown, Sidewalls, and Invert.
3. Tunnel Portals and Associated Structures.
4. Drainage Systems, Sumps, and Pumping Installations.
5. Ventilation Systems and Air Quality Monitoring Equipment.
6. Tunnel Lighting Systems and Emergency Lighting.
7. Fire Detection, Fire Fighting, and Life Safety Systems.
8. Electrical and Mechanical (E&M) Installations.
9. Traffic Management Systems, CCTV, VMS, and Communication Systems.
10. Emergency Exits, Cross Passages, Escape Routes, and Safety Signage.
11. Structural Health Monitoring Instruments and Tunnel Monitoring Systems.
12. Slope Protection and Rockfall Protection Works at Tunnel Portals.

The survey schedule shall be as follows:

Region	State	Survey Before Monsoon	Survey After Monsoon
South	Karnataka	April	November

In addition to the scheduled inspections, special inspections shall be carried out immediately following any major incident, fire, flooding, excessive seepage, landslide, earthquake, rockfall event, structural distress, or any occurrence that may affect the safety, integrity, or operation of the tunnel.

[NAME & LOGO OF IMPLEMENTING AGENCY]

[PROJECT NAME]

Authority Engineer

[NAME OF CONSULTING FIRM]

MONTHLY PROGRESS REPORT NO. [XX]

FOR THE MONTH OF: [MONTH], [YEAR]

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Note:

- The Authority Engineer shall submit all reports, certificates, inspection records, monitoring statements, checklists, registers and other deliverables in the manner prescribed under the subsequent clauses, formats and reporting requirements of this Agreement.
- The formats, reporting procedures and details provided herein are generally based on standard civil infrastructure projects such as roads, bridges and tunnels and are intended to serve as indicative templates.
- Since the present assignment relates to a Tunnel Road Project involving specialized tunnel structures and associated Electrical & Mechanical (E&M) systems, the Authority Engineer shall suitably review, modify and customize the prescribed formats, checklists, inspection procedures and reporting requirements to address the specific needs of the Project.
- The customized formats shall adequately cover monitoring and reporting of tunnel civil works, tunnel lining, portals, drainage systems, pavement, ventilation systems, lighting systems, fire and life safety systems, electrical and mechanical installations, SCADA systems, traffic management systems, emergency facilities and other project-specific components.
- The Authority Engineer shall prepare a comprehensive set of revised formats, reporting templates, inspection checklists, performance monitoring criteria and related documentation and submit the same to the Authority for review and approval within the period specified by the Authority.
- The Authority may review the submitted formats and direct modifications, additions or deletions as deemed necessary. The Authority Engineer shall incorporate such observations and resubmit the revised documents for approval.
- Upon receipt of approval from the Authority, the approved formats, procedures and reporting framework shall become the standard reporting mechanism for the Project.
- Thereafter, all reports, inspections, certifications, monitoring records and submissions by the Authority Engineer shall be prepared and submitted strictly in accordance with the approved formats until completion of the Authority Engineer's Services.
- Any subsequent modification to the approved formats or reporting procedures shall require prior approval of the Authority.

1 Executive Summary

1.1 Construction progress in current month

Scheduled Physical Progress (%)	
Cumulative Physical Progress upto current month (%)	
Physical Progress during current month (%)	
Financial progress (%)	
Cumulative Expenditure till date (Rs Cr)	

Tests passed as % of total tests witnessed by IE	
Tests passed as % of total tests conducted by IE	
Number of pending COS proposals	
Amount for pending COS (Rs Cr)	

1.2 Current issues and recommended actions by IE / AE

1. Slow Progress of Structures: The progress of structures (especially, major bridges, flyovers and ROB's) is very slow. Overall progress is only XX%. Out of the total YY underpasses not even single underpass structure and its approaches is completed so far. No bridge is open to traffic so far.

a. Recommendation: Concessionaire should improve the progress of structures. Request for revised workplan from Concessionaire including specific activities on structures.

2. Status of Change of Scope Proposals: Concessionaire has submitted Xx No. Change of Scope proposals. Yy No. of them are still pending for decision. Concessionaire has not submitted necessary clarifications /details for the following Changes of Scope in spite of several reminders.

a. Recommendation: Concessionaire to submit all pending clarifications to Authority. Authority and Concessionaire to expedite pending COS proposals.

1.3 Strip Plan (Summary)

1. Work front Unavailable & reason for Unavailability
2. Length completed by layer (MCW) 3. Length completed by layer (Service Road)

	Length (km)	% Total Pending Length
Total Length	80	
Total Workfront Unavailable	7	12%
Pending Land Acq.	0	0%
Pending Clearances	7	12%
Encumbrances	0	0%

	Length (km)	% Total Length
Total Length	80	
Total Length Completed (Till DBM)	27.5	33%
BC	27	32%
DBM	27.5	33%
WMM	29.5	35%
GSB	32.5	39%
Sub-Grade	35	42%
C&G	47.9	57%

	Length (km)	% Total Length
Total Length	35	
Total Length Completed (Till DBM)	0	0%
BC	0	0%
DBM	0	0%
WMM	0	0%
GSB	0	0%
Sub-Grade	0	0%
C&G		

1.4 Strip Plan (Details)

Detailed report

2 Project Overview

2.1 Salient Features of Project

Project Name	
NH No. (New/ Old)	
Scheme/ Phase	
Mode of the Execution (BOT Toll/ BOT Annuity/ EPC/ HAM/ Item Rate/ Others)	
No. of Lanes/ Configuration	
Length of the Project (in Km)	
Total Project Cost (in Cr)	
No. of Bypasses (Name of Town, Length)	

No. of Major Bridges (Number and Location)	
No. of Toll Plazas (Number and Location)	
No. of Fly Overs (Number and Location)	
DPR Authority's EngineerName	
Lead & Consortium Members of Banks	
Concessionaire Name (SPV & Parent Company)	
Date of Award (LOA Date)	
Appointed Date	
Concession Period	
Construction Period (in Days)	
O&M Period (in Days)	
Scheduled Date of Completion	
Authority Engineer	
IE / AE Agreement Date	
IE / AE Mobilization Date	

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

2.2 Project Milestones

Milestone I	[Description]	25	[DD/MM/YYYY]	25	[DD/MM/YYYY]	5	Achieved
Milestone II	[Description]	65	[DD/MM/YYYY]		[DD/MM/YYYY]	22	Started, not achieved

Scheduled Completion	[Description]	100	[DD/MM/YYYY]		[DD/MM/YYYY]	21	Not started

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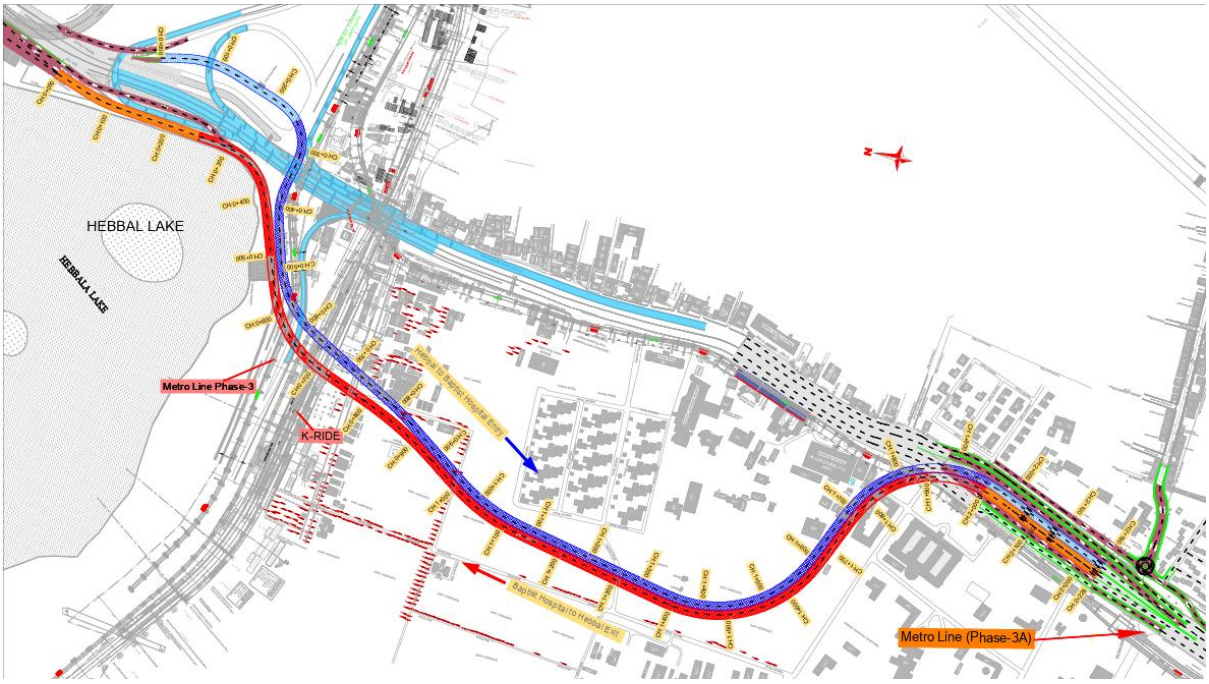
2.3 Location Map



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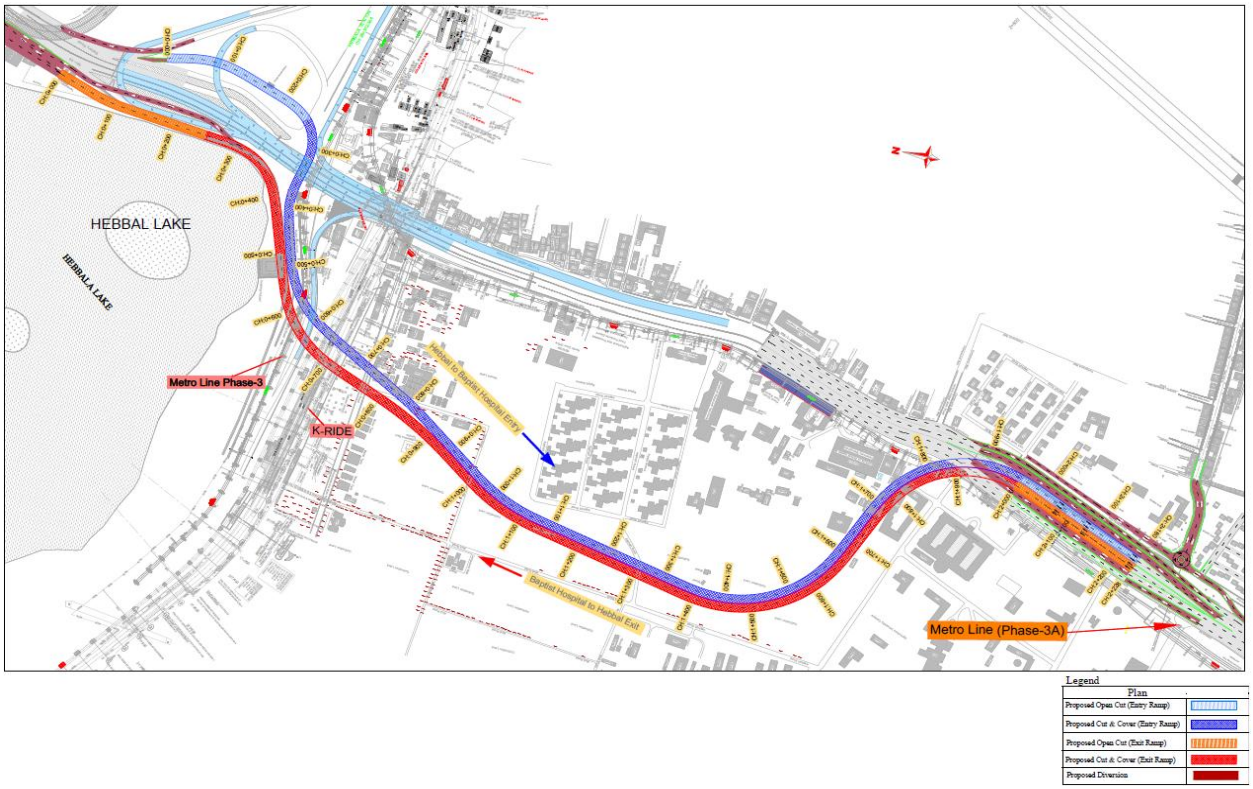
2.4 Key Plan



[Above image is illustrative only. Please include chainage and name below the axis and list of features above the axis]

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

3 Critical Issues & Action Log

3.1 Pending Issues & Action Log

S.N o	Issue Description	Type	Ongoing/ New Issue/ Resolve d	Concerned Authority	Chainage (s) affected due to the issue	Length affected (km)	Action(s) taken till now	Action(s) suggested by the AE	Expected date/ Actual Date for resolving issue
1	Diversion of Xx ha of forest Land	Clearance	Ongoin g Issue	MoEF	[Chainage]	4 kms	1. Proposal submitted to MoEFLetter sent by RO to MoEF nodal officer on [DD/MM/YYY Y]	Escalate to higher level officers at MoEF	[DD/MM/YYY Y]
2	21 Crcompensati on disbursement pending	Land Acquisition	Resolve d	[CALANam e]	[Chainage]	2.4 km	1. Escalated to chief secretary level through DO from Chairman/ Secretary, dated [DD/MM/YYY Y]		[DD/MM/YYY Y]
3	Slow progress by concessionair e	Concessionai re Issue	New Issue	[Concess. Name]	[Chainage]	57 km	None	Project Director to call higher ups of concessionai re	[DD/MM/YYY Y]

3.2 Obligations as per Contract

Expected Contents & Structure
Please write a summary of non-compliances of contractual obligations highlighting reasons for delay, stating pending actions and their potential risk to the project's progress and recommended actions by the IE. • Critical obligation sand constraints of concessionaire as per contract • Critical obligations of authority as per contract • Critical pending obligations of IE as per contract NOTE: Please include important issues requiring intervention of various parties, giving details and background wherever necessary

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

4 Physical Progress

Road Works	35.00%	5%	15.0%
Major Bridge works and ROB / RUB	40.00%	1.20%	26.2%
Structures	21.00%	0.00%	0.8%
Other Works	4.00%	0.00%	0.0%
Physical Progress		2%	42.0%

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

4.1 Detailed Scope of Work & Physical Progress by Component

1	2	3	4	5	6	7	8
1. Road works including culverts, minor bridges, underpasses, overpasses,	35.00 %	1. C&G	5.00%	80 km	45 km	56%	2.8%
		2. Embankment	5.00%	80 km	40 km	50%	2.5%
		3. Sub Grade	5.00%	80 km	35 km	44%	2.2%
		4. GSB	5.00%	80 km	33 km	41%	2.1%
		5. WMM	5.00%	80 km	30 km	38%	1.9%

approaches to ROB/RUB/ Major Bridges / Structures (but excluding service roads)		6. DBM	5.00%	80 km	28 km	35%	1.8%
		7. BC	5.00%	80 km	27 km	34%	1.7%
2. Major Bridge works and ROB/RUB	40.00 %	1. Major Bridges	10.00 %	6 No	6 No	100%	10.0 %
		2. Minor Bridges	5.00%	23 No	21 No	91%	4.6%
		3. Flyovers	5.00%	2 No	0	0%	0.0%
		4. ROB	5.00%	228 No	121 No	53%	2.7%
		5. VUP	5.00%	11 No	6 No	55%	2.7%
		6. PUP	5.00%	15 No	6 No	40%	2.0%
		7. RUB	5.00%	136 No	114 No	84%	4.2%
3. Structures (elevated sections, reinforced earth)	21.00 %	1. Foundation	5.00%	35 km	2.2 km	6%	0.2%
		2. Sub-structure	5.00%	35 km	2.1 km	6%	0.2%
		3. Super-structure	5.00%	35 km	2.1 km	6%	0.2%
		4. Reinforced Earth Wall	6.00%	35 km	2.1 km	6%	0.2%
4. Other Works	4.00%	1. Toll Plaza	4.00%	4 No	0	0%	0.0%
GRAND TOTAL			100%				42.0 %

5 Land Acquisition and Clearance

5.1 LA Summary

Existing ROW	135.00	135.00	0.00
Pvt. Land To be Acquired	240.00	0.000	240.00
Public Land To be Transferred	52.00	50.35	1.65
Grand Total	427	185	242

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

5.2 LA Detail by CALA

CALA1]	150	15	15	15	135	0	150	0	150	396	370	327	43
[CALA2]	67	0	0	0	67	0	67	0	67	132	132	120	23
[CALA3]	23	23	23	23	0	14	9	0	23	0	0	0	0
Grand Total	240	38	202	38	202	14	226	0	240	528	502	447	66

5.3 LA Detail by Village for each CALA

CALA 1

[Village 1]	150	15	15	15	135	0	150	0	150	396	370	327	43
[Village 2]	67	0	0	0	67	0	67	0	67	132	132	120	23
[Village 3]	23	23	23	23	0	14	9	0	23	0	0	0	0
Grand Total	240	38	202	38	202	14	226	0	240	528	502	447	66

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

5.4 Manpower details of CALA

		Bangalore Development Authority									
[CALA1]	<Agency>	4	1	0	0	3	0	3	1	0	12

[CALA1]	State Govt	2	0	2	0	0	0	1	0	0	5
[CALA2]	<Agency>										
[CALA2]	State Govt										
Grand Total											

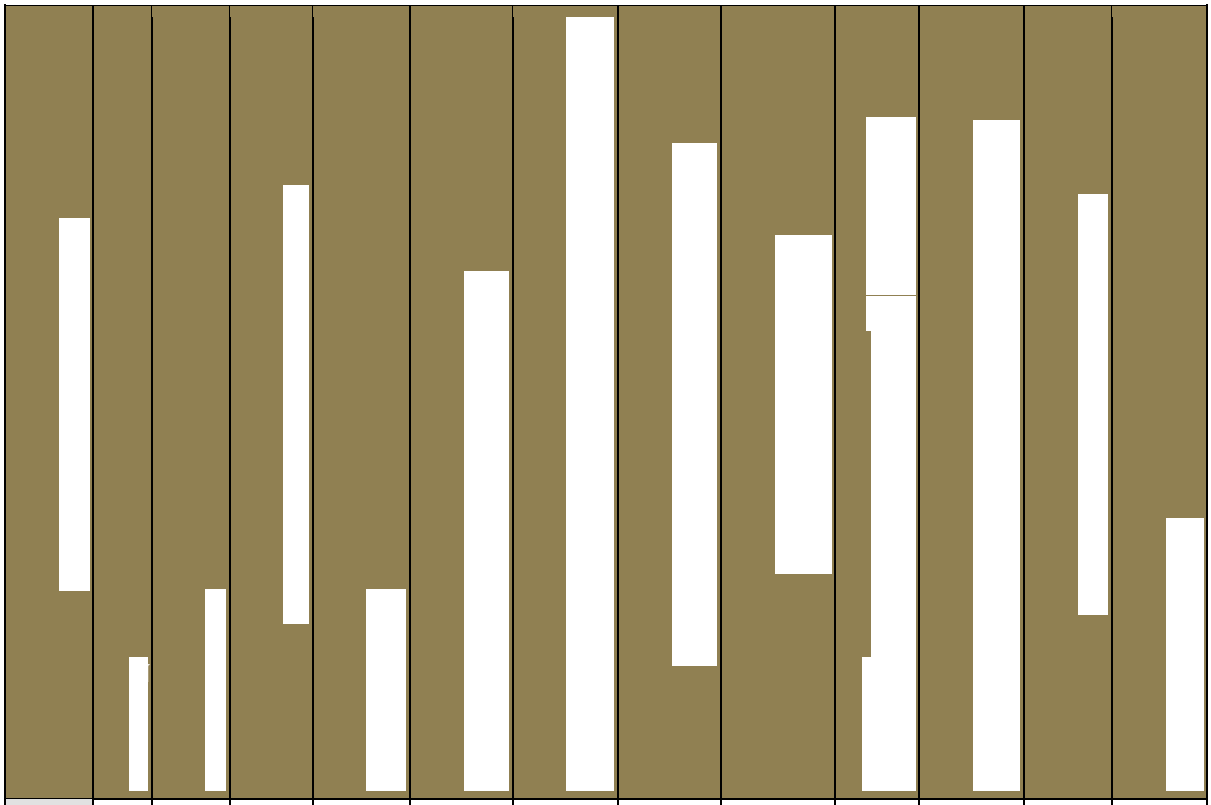
5.5 Clearances Summary

	Environment			
Approval of construction in coastal zone	Obtained	Nil	Completed	
	Forest Land			
Diversion of Xx ha ([Chainage])	Pending	[Length in km]	Completed	e 1 clearance pending
Diversion of Xx Ha. ([Chainage])	Obtained	Nil	Ongoing	

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

Wildlife				
Diversion of Xx Ha. of forest land	Pending	[Length in km]	Ongoing	Queries sent to MoEF by RO, compliance pending
TreeCutting				
N.A.	N.A.	N.A.	N.A.	N.A.
Railway (ROBs/RUBs)				
[GAD Number]	Proposal Submitted, Approval pending	[Chainage]	Uploaded on portal on [DD/MM/YYYY]	N.A.

5.6 Status of utilities shifting



Water		Estimate Approved	[Length in km]	[DEPARTMENT]	[DD/MM/YYYY]	[DD/MM/YYYY]	[DD/MM/YYYY]	[DD/MM/YYYY]	Not started	TBD		
Electricity		Estimate Approved	[Length in km]	[DEPARTMENT]	[DD/MM/YYYY]	[DD/MM/YYYY]	[DD/MM/YYYY]	[DD/MM/YYYY]	Not started	TBD		

Others		Estimate Approved	[Lengthinkm]	[DEPARTMENT]	[DD/MM/YYYY]	[DD/MM/YYYY]	[DD/MM/YYYY]	[DD/MM/YYYY]		TBD		

6 Change of Scope

1	Construction of [Flyover Name] at [Chainage]	[DD/MM/YYYY]	Approved in principle by Authority. Detailed quantities in proper order yet to be submitted	[+/ - Amount]	[DD/MM/YYYY]
2	Nallah diversion through box culvert at[Chainage]	[DD/MM/YYYY]	Clarifications to be submitted by Concessionaire , expected date[DD/MM/YYYY]	[+/ - Amount]	[DD/MM/YYYY]

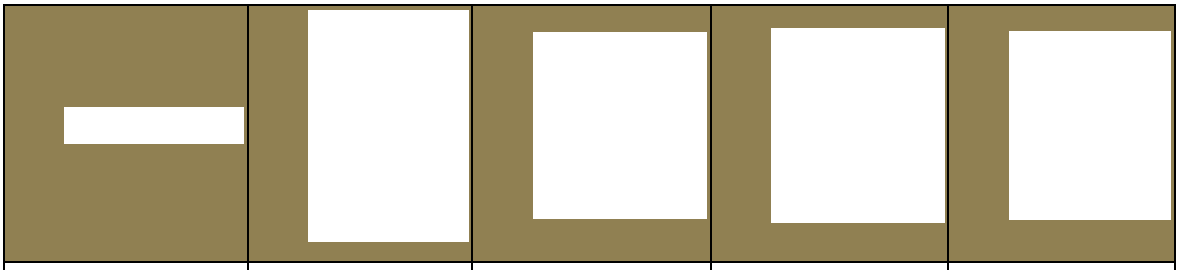
7 Mobilization of Resources

	Excavator/ Poclain					5				
	Paver					2				

	Transit Meter					0				
	Plate Compactors					0				
	[ADD OTHERS]									

8 Financial Progress Details (for PPP projects)

8.1 Pen Picture - Escrow



1,206	1,033	900	30	35

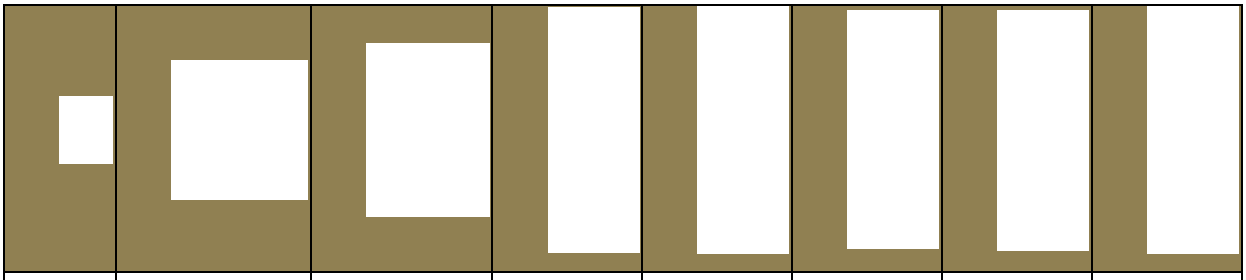
$A = \pi r^2$ the Escrow withdrawals in accordance with the order of withdrawal as specified in the Concession Agreement?

Tick as applicable

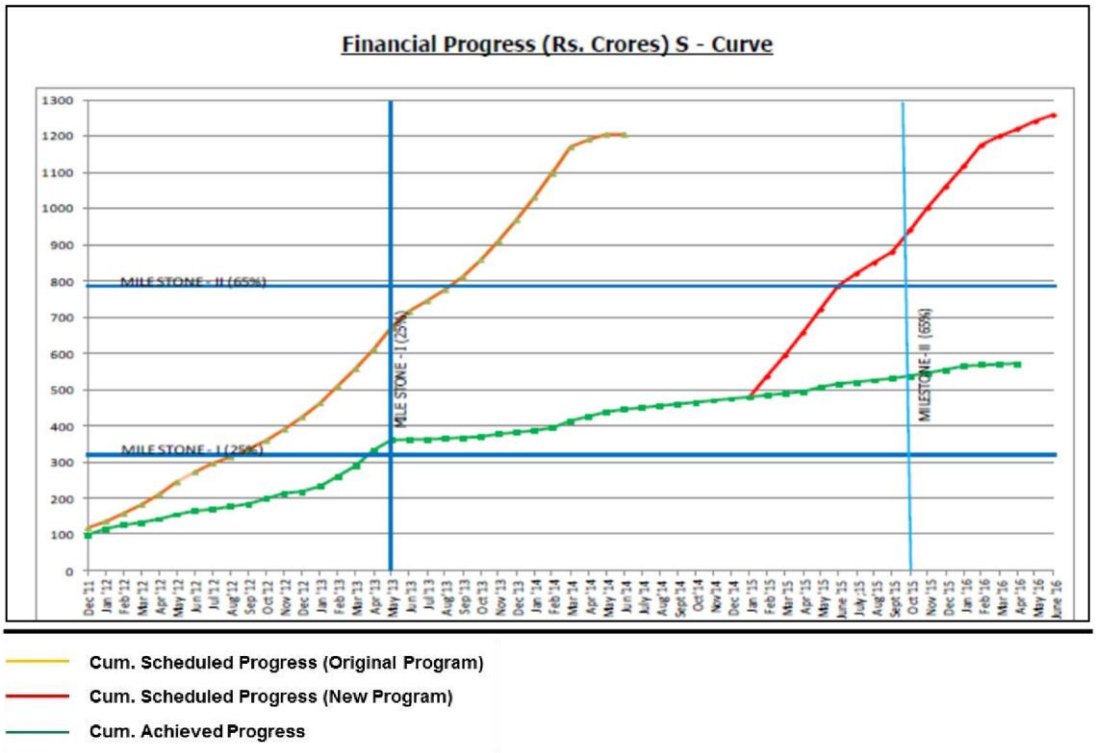
If not, details to be provided below:

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

8.2 Escrow details



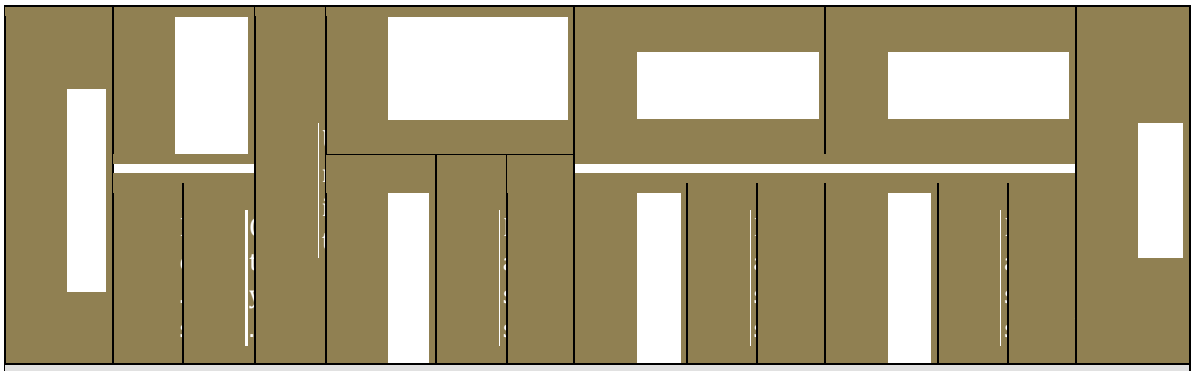
1,206	1,033	900	306	-	769	264	-


Financial Progress (Rs. Crores) S - Curve
MILE STONE - II (65%)
MILE STONE - I (25%)
MILESTONE-II (65%)
Cum. Scheduled Progress (Original Program)
Cum. Scheduled Progress (New Program)
Cum. Achieved Progress

PLEASE EXCLUDE OUTSTANDING MOBILIZATION FEE/ ADVANCE IN S-CURVE

9 Summary of quality control tests

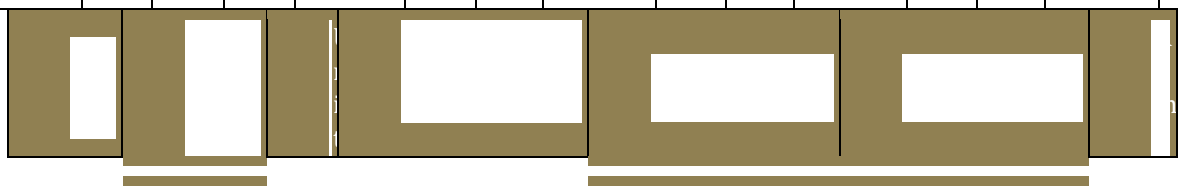
9.1 Tests witnessed by IE/ AE



Sub grade

Proctor test	1	1500	m3	0	0	0	0	0	0	0	0	0	
Atterberg Limits	1	1500	m3	0	0	0	0	0	0	0	0	0	
Free Swell Index	1	1500	m3	0	0	0	0	0	0	0	0	0	

Grain Size Analysis	1	1500	m3	0	0	0	0	0	0	0	0	0	
C.B.R	1	3000	m3	0	0	0	0	0	0	0	0	0	
Granular Sub Base													
Gradation	1	200	m3	151	151	0	5	5	0	156	156	0	
Atterberg Limits	1	200	m3	151	136	15	5	5	0	151	136	15	
Procter test	1	1500	m3	0	0	0	0	0	0	0	0	0	
Wet Mix Macadam													
Filter material													
Concrete													
Cement													
Water													
Prime Coat													
Tack coat													
Dense Bitumino u													



s Macadam													
Bituminous Concrete													
Bitumen test													
DLC													
Steel													

9.2 Tests conducted by IE / AE

<Quality inspection test results to be reported in a table similar to the table provided in
previous section>

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

10 Monitoring of maintenance obligations during construction phase

10.1 Critical issues and action log

SNO		Issue						
1	Drying up of plants on median	Ongoing	Concessionaire	325+200 to 327+800	2.6	Irregular watering	Replacement of plants and daily watering	NA
2	Large potholes	New	Concessionaire	387+300 LHS	0.1	None	Filling of potholes	<DD/M M>

10.2 Summary of repair work

1	Carriageway and paved shoulders						
(a)	Pot Holes	Sqm	42	-	-	42	
(b)	Roughness value exceeding 2,500mm	mm					
(c)	Cracking in more than 5% of road surface	Sqm	7179	-	-	7179	
(d)	Rutting exceeding 10mm in more than 2% of road surface	Sqm	5	-	-	5	
(e)	Bleeding/Skiding	Sqm					

(f)	Ravelling	Sqm					
(g)	Damage to pavement edges exceeding 10cm	m					
2	Hard/Earth Shoulders						
(a)	Rain cuts/ gullies in slope	Cum	650	25	-	625	
(b)	Edge drop at shoulders exceeding 40 mm	m					
3	Drains and culverts						
(a)	Cleaning of Culvert	Nos	1	-	-	1	
(b)	Damage to or silting of culverts						
(c)	Silting of drains in urban/ semi urban areas						
4	Road furniture						
(a)	Sign Boards	Nos	456	-	-	456	
(b)	Kilometer Stones						
(c)	Metal Beam Crash Barrier						
(d)	Bus Shelters	Nos	72	4	-	68	
(e)	Junction signs	Nos	26	8	-	18	
(f)	Median Grills	Rmt	894	-	-	894	
(g)	Studs	Nos	5328	-	-	5328	
(h)	Delinators	Nos	8236	-	-	8236	
(i)	Road Marking	Sqm	1899	-	-	1899	
(j)	Kerb Painting	Sqm	4575	-	-	4575	
(k)	Guard Posts	Nos	3657	-	-	3657	

5	Street lighting and telecom (ATMS)						
(a)	Street lights	Nos					
(b)	Telecom	Nos					
6	Trees and plantation						
(a)	Removal of vegetation affecting sight line and road structures	Ha	77.42	-	3.57	73.85	
(b)	Replacement of trees and bushes	Nos	15072	-	-	15072	

7	Buildings and bridges						
(a)	Rest areas						
(b)	Toll plazas						
(c)	Bridges						

10.3 Status of damages

1	Upto June 2016	
2	Jul 2016	
3	Aug 2016	
4	Sep 2016	
	Total	

11 Safety features

11.1 Pen picture of safety features

Details to be provided after assessment of the site requirement vis-à-vis provisions in the Concession Agreement:

11.2 Accident Report

		Chainage nt														No of affected persons			
																fatal	Major	Minor	
1	1/1/17	382/050 RHS	05:25 pm	M	2	2	3	4	1	1	-	1	3	1	3	-	1	1	Ambu

Mapping of report fields to responses

A	1. Urban 2. Rural
B	1. Overturned 2. Head On Collision 3. Hit from Back 4. Hit to Fix Object 5. Right turn Collision 6. Left turn Collision 7. Veered Out off The Road 8. Hit Pedestrian 9. Unknown/Hit & Ran Away
C	1. Fatal 2. Major injury 3. Minor injury
D	1. Drunken 2. Over Speeding 3. Vehicle out of Control 4. Driven on wrong side 5. Mechanical Problem 6. Drowsiness/Not Applicable 7. Fault of Driver
E	1. Normally Loaded 2. Overloaded/Handing 3. Empty 4. Unknown
F	1. Straight road 2. Slight Curve 3. Sharp Curve 4. Hump 5. Dip
G	1. T-Junction 2. Y-Junction 3. Four arm Junction 4. Staggered Junction 5. Junction with more than 6. Round about
H	1. Fine/Clear 2.Mist/Fog 3. Cloudy 4. Light Rain 5. Heavy Rain 6. Strong Wind 7. Dust Storm 8. Cold 9. Hot
I	1. 0-18 Years 2. 18-25 Years 3. 25-40 Years 4.40-60 Years 5. 60-80 Years
J	1. Driver 2. Passenger 3. Pedestrian 4. Cyclist 5. Others
K	1. Two Wheeler 2. Auto Rickshaw 3. Car/Jeep 4. Bus 5. Light Truck 6. Heavy Truck 7. Tractor 8. Bicycle 9. Cycle Rickshaw 10. Hand Drawn Cart 11. Animal Drawn Cart

12 Annexures

Annex 1. Detailed List of Physical Components as per Schedule G

Component	Physical Item
Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/ Major Bridges/ Structures (but excluding service roads)	A- Widening and strengthening of existing road
	(1) Earthwork up to top of the sub-grade
	(2) Granular work (sub- base, base, shoulders)
	(a) GSB
	(b) WMM
	(3) Shoulders
	(4) Bituminous work
	(a) DBM
	(b) BC
	(5) Rigid Pavement
	Concrete work
	(6) Widening and repair of culverts
	(7) Widening and repair of minor bridges
	B- New realignment/bypass
	(1) Earthwork up to top of the sub-grade
	(2) Granular work (sub- base, base, shoulders)
	(a) GSB
	(b) WMM
	(3) Shoulders
	(4) Bituminous work
	(a) DBM
	(b) BC
	(5) Rigid Pavement
	Concrete work
	C-New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:
	(1) Culverts
	(2) Minor bridges
	(a) Foundation
	(b) Sub-structure
	(c) Super-structure (including crash barriers etc. complete)
	(3) Cattle/Pedestrian underpasses
	(a) Foundation
	(b) Sub-structure
	(c) Super-structure (including crash barriers etc. complete)
	(4) Pedestrian overpasses
	(a) Foundation
	(b) Sub-structure
	(c) Super-structure (including crash barriers etc. complete)
	(5) Grade separated structures

	(a) Underpasses
	(i) Foundation
	(ii) Sub-structure
	(iii) Super-structure (including crash barriers etc.complete)
	(b) Overpass
	(i) Foundation
	(ii) Sub-structure
	(iii) Super-structure (including crash barriers etc. complete)
	(c) Flyover
	(i) Foundation
	(ii) Sub-structure
	(iii) Super-structure (including crash barriers etc. complete)
	(d) Foot over Bridge
MajorBridge works and ROB/RUB	A- Widening and repairs of Major Bridges
	(1) Foundation
	(a) Open Foundation
	(b) Pile Foundation/Well Foundation
	(2) Sub-structure
	(3) Super-structure (including crash barriers etc. complete)
	B- Widening and repair of
	(a) ROB
	(1) Foundation
	(2) Sub-structure
	(3) Super-structure (including crash barriers etc. complete)
	(b) RUB
	(1) Foundation
	(2) Sub-structure
	(3) Super-structure (including crash barriers etc. complete)
	C- New Major Bridges
	(1) Foundation
	(a) Open Foundation
	(b) Pile Foundation/Well Foundation
	(2) Sub-structure
	(3) Super-structure (including crash barriers etc. complete)
	D- New rail-road bridges
	(a) ROB
	(1) Foundation
	(2) Sub-structure
	(3) Super-structure (including crash barriers etc. complete)
	(b) RUB
	(1) Foundation
	(2) Sub-structure
	(3) Super-structure (including crash barriers etc. complete)
	(1) Foundation

Structures (elevated sections, reinforced earth)	(2) Sub-structure
	(3) Super-structure (including crash barriers etc. complete)
	(4) Reinforced Earth Wall (includes Approaches of ROB, Underpasses, Overpasses, Flyover etc.
Other Works	(i) Service roads/ Slip Roads
	(ii) Toll Plaza
	(iii) Road side drains
	(iv) Road signs, markings, km stones, safety devices, ….
	(a)Road signs, markings, km stones, ….
	(b) Concrete Crash Barrier/ W-Beam Crash Barrier in Road work
	(v) Project facilities
	(a) Bus bays
	(b) Truck lay-byes
	(c) Rest areas
	(vi) Repairs to bridges/structures
	(vii) Road side plantation
	(viii) Protection works
	(a) Boulder Pitching on slopes
	(b) Toe/Retaining wall
	(ix) Tunnel
	(a) Excavation
	(b) Construction of support systemincluding rock bolting, lining etc.
	(c) On complete completion of tunnel
	(x) Miscellaneous

* The above list is illustrative and may require modification as per the actual scope of the work

Annex 2. Onwards

IE / AE should include comments, status update, data points and reports in following annexures which have not been included elsewhere in the main report. Such reports may include but not limited to:

- Review status of drawings/ design reports
- Review status of other documents
- Minutes of review meeting
- Detailed Inspection report of Tunnel Project
- Correspondence details
- Weather report
- Organizational chart of Concessionaire / Contractor and IE / AE
- List of lab equipment
- Details of user complaints Project photographs

Annexure VII-OUTPUT FORMAT FROM NETWORK SURVEY VEHICLE AND FWD TESTING

[NAME & LOGO OF IMPLEMENTING AGENCY]

[PROJECT NAME]

Authority Engineer

[NAME OF CONSULTING FIRM]

OUTPUT FROM NETWORK SURVEY VEHICLE AND FWD TESTING

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Annexure VII: OUTPUT FORMAT FROM NETWORK SURVEY VEHICLE AND FWD TESTING (SECTION 1: TESTING AT TIME OF COMPLETION, SECTION 2: FWD ATTRIBUTES - ANNUALLY, BALANCE PARAMETERS –BIANNUALLY AFTER CONSTRUCTION PHASE)

In addition to the reports being submitted on equipment based inspection as specified in Section 4.2 of the Monthly Progress Report in the O&M phase, the Authority Engineer (AE) shall submit electronically in excel (.xls) format certain key parameters to the Project Director in the following format.

Worksheets under Section 1 ('Road inventory data') shall be updated from surveys conducted only once at the time of completion testing. Worksheets under Section 2 ('Road condition data') shall be updated from surveys carried out annually for FWD attributes and biannually for the remaining attributes.

The fields to be updated in each of the worksheets are described below. Each description is followed by an example of data for a sample project.

SECTION 1 - ROAD INVENTORY DATA

Road inventory data consists of parameters which provide basic information about roads such as pavement type, number of lanes, topography, etc. These parameters are largely static in nature, and therefore a survey to update this dataset shall be conducted only once at the time of completion testing. The road inventory data shall be used to update specific worksheets listed below.

1.1 Location Reference Post (LRP) Master

The following table lists the fields which need to be populated for the 'LRP Master' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
LRP Name	Name of location reference post (LRP)	Km stone 17
Chainage	Chainage of the survey point (in km)	17
Direction	Direction of survey • Increasing (chainage) • Decreasing (chainage)	Increasing
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Old NH Number	Old National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)

A sample output is shown below for reference

NH0xxx	Road Start	1.230	Increasing	9.98897	78.02671	63.07767	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone 8	8.000	Increasing	9.98444	78.02934	68.60126	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone 8	8.030	Increasing	9.98341	78.03004	68.15520	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone	9.008	Increasing	9.98107	78.03078	65.17153	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone	12.012	Increasing	9.96328	78.04160	56.03436	23-12-15	NH0yyy	ABC-DEF

NH0xxx	Km Stone 17	17.085	Increasing	9.95385	78.05255	56.24748	23-12-15	NH0yyy	ABC-DEF

1.2 Carriageway Type

The following table lists the fields which need to be populated for the 'Carriageway Type' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Carriageway Type	Type of carriageway, classified into one of the below categories: • Divided • Undivided	Divided
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference

NH00xx	ABC-DEF	0.000	0.794	Undivided	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Undivided	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Undivided	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	2.810	4.335	Undivided	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Undivided	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Undivided	06-05-17	9.95385	78.05255

1.3 Road Type

The following table lists the fields which need to be populated for the 'Road Type' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
Section Code	ode indicating starting and ending locations of section	YD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Road Type	Classification of road on basis of number of lanes • Single Lane • Two Lane • Intermediate Lane • Four Lane • Six Lane	Four Lane
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH00xx	ABC-DEF	0.000	0.794	Two Lane	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Two Lane	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Two Lane	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	2.810	4.335	Two Lane	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Two Lane	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Two Lane	06-05-17	9.95385	78.05255

1.4 Pavement Type

The following table lists the fields which need to be populated for the 'Pavement Type' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
Section Code	ode indicating starting and ending locations of section	YD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500

Direction	Direction of survey • Increasing (chainage) • Decreasing (chainage)	Increasing
Pavement Type	Classification of pavement based on type of surface: • Asphalt • Cement concrete	Asphalt
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH00xx	ABC-DEF	0.000	0.804	Both	Asphalt	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.804	1.000	Both	Asphalt	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	1.172	Both	Asphalt	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.172	2.821	Both	Asphalt	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.821	4.350	Both	Asphalt	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	4.350	6.710	Both	Asphalt	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	6.710	12.925	Both	Asphalt	06-05-17	9.93102	78.05648

1.5 Pavement Width

The following table lists the fields which need to be populated for the 'Pavement Width' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065

Section Code	ode indicating starting and ending locations of section	YD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey • Increasing (chainage) • Decreasing (chainage)	Increasing
Pavement Width	Width of the pavement in metres, classified into one of the below categories • >= 3.75m and < 5.5m • >5.5m and < 7m • >= 7m and < 10.5m • >=10.5m and <=12.5m • > 12.5m	>7m and <10.5m
Pavement Width Value	idth of the pavement in metres, rounded to two places after decimal	7.0
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Pavement Width	Pavement Width Value	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.794	Both	7 – 10.5 m	7.00	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Both	7 – 10.5 m	7.00	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Both	7 – 10.5 m	7.00	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	2.810	4.335	Both	7 – 10.5 m	7.00	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Both	7 – 10.5 m	7.00	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Both	7 – 10.5 m	7.00	06-05-17	9.95385	78.05255

1.6 Shoulder Type

The following table lists the fields which need to be populated for the 'Shoulder Type' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065

Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Shoulder Type	Type of shoulder, classified into one of the below categories: None Paved Gravel Earth	Gravel
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	ShoulderType	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.763	Increasing	No Shoulder	09-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.763	0.834	Increasing	Gravel	09-01-16	9.98444	78.02934
NH00xx	ABC-DEF	0.834	1.254	Increasing	Gravel	09-01-16	9.98341	78.03004
NH00xx	ABC-DEF	1.254	2.945	Increasing	Gravel	05-01-16	9.98107	78.03078
NH00xx	ABC-DEF	2.945	4.327	Increasing	Gravel	05-01-16	9.96328	78.04160
NH00xx	ABC-DEF	4.327	4.405	Increasing	Gravel	05-01-16	9.95385	78.05255
NH00xx	ABC-DEF	4.405	6.844	Increasing	Gravel	05-01-16	9.93102	78.05648
NH00xx	ABC-DEF	6.844	9.359	Increasing	Gravel	05-01-16	9.91229	78.04961
NH00xx	ABC-DEF	9.359	12.966	Increasing	Gravel	05-01-16	9.89041	78.03458

1.7 Shoulder Width

The following table lists the fields for the 'Shoulder Width' attribute, which need to be populated. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065

Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey • Increasing (chainage) • Decreasing (chainage)	Increasing
Shoulder Width	Width of the shoulder in metres, classified into one of the below categories No shoulder • < 1m • >= 1m and <= 2m • > 2m	< 1m
Shoulder Width Value	Width of the shoulder in metres, rounded to one place after decimal	0.5
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Shoulder Width	Shoulder Width Value	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.785	Increasing	No Shoulder	0.0	03-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.785	2.612	Increasing	No Shoulder	0.0	03-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	2.612	3.170	Increasing	1-2m	2.0	03-01-16	9.98341	78.03004
NH0xxx	ABC-DEF	3.170	5.194	Increasing	1-2m	2.0	03-01-16	9.98107	78.03078
NH0xxx	ABC-DEF	5.194	6.793	Increasing	1-2m	2.0	03-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	6.793	11.404	Increasing	1-2m	2.0	03-01-16	9.95385	78.05255

1.8 Topography

The following table lists the fields which need to be populated for the 'Topography' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
Section Code	ode indicating starting and ending locations of section	YD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Topography	Topography of the road, classified into one of the below categories • Flat • Rolling • Hilly	Flat
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Topography	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.808	Flat	05-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.808	1.254	Flat	05-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	1.254	2.828	Flat	05-01-16	9.98341	78.03004
NH0xxx	ABC-DEF	2.828	4.363	Flat	05-01-16	9.98107	78.03078
NH0xxx	ABC-DEF	4.363	6.724	Flat	05-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	6.724	12.933	Flat	05-01-16	9.95385	78.05255

1.9 Cross Section

The following table lists the fields which need to be populated for the 'Cross Section' attribute.

The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
Section Code	ode indicating starting and ending locations of section	YD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey • Increasing (chainage) • Decreasing (chainage)	Increasing

Cross Section	Cross section type, classified into one of the below categories	Fill
Field	Description	Example
	• Cut • Fill • Cut and Fill • Level	
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Cross Section	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.822	Increasing	Level	03-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.822	2.642	Increasing	Level	03-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	2.642	3.199	Increasing	Level	03-01-16	9.98341	78.03004
NH0xxx	ABC-DEF	3.199	5.360	Increasing	Level	03-01-16	9.98107	78.03078
NH0xxx	ABC-DEF	5.360	5.715	Increasing	Fill	03-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	5.715	6.941	Increasing	Level	03-01-16	9.95385	78.05255
NH0xxx	ABC-DEF	6.941	11.163	Increasing	Level	03-01-16	9.93102	78.05648

1.10 Drain Type

The following table lists the fields which need to be populated for the 'Drain Type' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
Section Code	ode indicating starting and ending locations of section	YD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey • Increasing (chainage) • Decreasing (chainage)	Increasing

Drain Type	Type of drain, classified into one of the below categories Open unlined drain Open lined drain Covered line drain No drain	Open lined drain
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	SectionCode	StartChainage	EndChainage	Direction	DrainType	SurveyDate	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.069	Increasing	Open Unlined Drain	09-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.069	0.782	Increasing	Open Lined Drain	09-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	0.288	0.000	Decreasing	Open Unlined Drain	09-01-16	9.98341	78.03004
NH0xxx	ABC-DEF	0.782	0.846	Increasing	Open Unlined Drain	09-01-16	9.98107	78.03078
NH0xxx	ABC-DEF	0.846	1.254	Increasing	Open Unlined Drain	09-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	1.254	2.265	Increasing	Open Unlined Drain	05-01-16	9.95385	78.05255
NH0xxx	ABC-DEF	1.929	0.288	Decreasing	Open Unlined Drain	09-01-16	9.93102	78.05648
NH0xxx	ABC-DEF	1.952	1.929	Decreasing	No Drain	09-01-16	9.91229	78.04961
NH0xxx	ABC-DEF	2.265	3.005	Increasing	Open Unlined Drain	05-01-16	9.89041	78.03458
NH0xxx	ABC-DEF	2.680	1.952	Decreasing	Open Unlined Drain	09-01-16	9.88489	78.02995
NH0xxx	ABC-DEF	3.005	4.424	Increasing	Open Unlined Drain	05-01-16	9.87474	78.02828
NH0xxx	ABC-DEF	3.109	2.680	Decreasing	Open Unlined Drain	09-01-16	9.87363	78.02744
NH0xxx	ABC-DEF	3.320	3.109	Decreasing	Covered Line Drain	09-01-16	9.84857	78.01535

NH0xxx	ABC-DEF	3.917	3.320	Decreasing	Open Unlined Drain	09-01-16	9.83764	78.00392
NH0xxx	ABC-DEF	4.424	4.601	Increasing	Open Unlined Drain	05-01-16	9.83711	77.98576
NH0xxx	ABC-DEF	4.601	5.693	Increasing	Open Unlined Drain	05-01-16	9.83386	77.97729

1.11 Median Opening

The following table lists the fields which need to be populated for the 'Median Opening' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Median Type	Type of median, classified into one of the below categories Raised; Depressed; Barrier; ? None.	Raised
Field	Description	Example
Median Width	Width of the median in metres, rounded to one place after decimal	0.5
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	Section Code	Start Chainage	End Chainage	Direction	Median Type	Median Width	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.794	Both	Raised	0.5	05-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Both	Raised	0.5	05-01-16	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Both	No Median	0.0	05-01-16	9.98341	78.03004

NH00xx	ABC-DEF	2.810	4.335	Both	Raised	1.5	05-01-16	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Both	No Median	0.0	05-01-16	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Both	No Median	0.0	05-01-16	9.95385	78.05255

1.12 Right Of Way

The following table lists the fields which need to be populated for the 'Right of Way' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Row Width	Width of Right of Way (in metres)	24
Remarks		
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	Section Code	Start Chainage	End Chainage	Direction	ROW Width	Remarks	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	1.000	Increasing	28		05-05-15	9.98897	78.02671
NH0xxx	ABC-DEF	1.000	2.000	Increasing	24		05-05-15	9.98444	78.02934
NH0xxx	ABC-DEF	2.000	3.000	Increasing	30		05-05-15	9.98341	78.03004
NH0xxx	ABC-DEF	3.000	4.000	Increasing	26		05-05-15	9.98107	78.03078
NH0xxx	ABC-DEF	4.000	11.000	Increasing	24		05-05-15	9.96328	78.04160

1.13 Pavement composition

The following table lists the fields which need to be populated for the 'Pavement composition' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)

Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Pavement Type	Type of pavement Asphalt Cement concrete	Asphalt
Bituminous Surface Course Type	Type of bituminous surface course	BC
Bituminous Surface Course Thickness MM	Thickness of BSC layer in mm	40
BSC Construction Year	Year of construction of BSC layer in flexible pavements	2015
Bituminous Base Course Type	Type of bituminous base course	DBM
Bituminous Base Course Thick—ness	Thickness of BBC layer in mm	100
BBC Construction Year	Year of construction of BBC layer in flexible pavements	2015
Granular Base Type	Type of granular base	WMM
Granular Base Thickness	Thickness of GB layer in mm	250
GB Construction Year	Year of construction of GB layer in flexible pavements	2015
Pavement Quality Concrete Type	Type of pavement quality concrete	PQC
Pavement Quality Concrete Thickness	Thickness of PQC layer in mm	300
PQC Construction Year	Year of construction of PQC layer in rigid pavements	2015
Dry Lean Concrete Thickness MM	Thickness of DLC layer in mm	100
Dry Lean Concrete Type	Type of dry lean concrete	DLC
DLC Construction Year	Year of construction of DLC layer in rigid pavements	2015
Granular Sub Base Type	Type of granular sub base	GSB
Granular Sub Base Thickness	Thickness of GSB layer in mm	200
GSB Construction Year	Year of construction of GSB layer	2014
Design CBR	Design CBR of the subgrade, expressed in %	5%

Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Field	Description	Example
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH No.	Section Code	Start Chainage	End Chainage	Direction	Pavement Type	Bituminous Surface Course Type	Bituminous Surface Course Thickness	BSC Construc-tion Year	Bituminous Base Course Type	Bituminous Base Course Thickness	BBC Const-c-tion Year
NH00xx	ABC-DEF	0.0	5.0	Both side	Asphalt	BC	40.0	2015	DBM	100	2015
NH00xx	ABC-DEF	5.0	11.0	Both side	Asphalt	BC	40.0	2015	DBM	80	2015
NH00xx	ABC-DEF	11.0	20.0	Both side	Asphalt	SDBC	25.0	2015	BM	115	2015
NH00xx	ABC-DEF	20.0	22.0	Both side	Asphalt	BC	40.0	2015	DBM	100	2015
NH00xx	ABC-DEF	22.0	30.0	Both side	Asphalt	SDBC	25.0	2015	BM	115	2015
NH00xx	ABC-DEF	30.0	31.0	Both side	Asphalt	BC	40.0	2015	DBM	100	2015

(table continued...)

GB Construction Year	Pavement Quality Concrete Type	Pavement Quality Concrete Thickness	PQC Construction Year	Dry Lean Concrete Thickness	Dry Lean Concrete Type	DLC Construction Year	Granular Sub Base Type	Granular SubBase Thickness	GSB Construction Year	Design CBR	Survey Date	Latitude	Longitude
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.99	78.03
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.98	78.03
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.98	78.03
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.98	78.03
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.96	78.04

2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-0515	9.95	78.05

1.14 Carriageway Furniture

The following table lists the fields which need to be populated for the 'Carriageway Furniture' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Field	**Description**	**Example**
Wayside Amenity Type	Wayside amenities classified into one of the below categories: Crash barriers Signs Street Lights Km stone	Road sign
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	SectionCode	Chainage	Direction	EventType	SurveyDate	Latitude	Longitude
NH00xx	ABC-DEF	0.012	Increasing	Street Light Start	03-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.287	Increasing	Street Light End	03-01-16	9.98444	78.02934
NH00xx	ABC-DEF	2.491	Decreasing	Road Sign	03-01-16	9.98341	78.03004
NH00xx	ABC-DEF	2.708	Decreasing	Road Sign	03-01-16	9.98107	78.03078
NH00xx	ABC-DEF	3.496	Increasing	Road Sign	03-01-16	9.96328	78.04160
NH00xx	ABC-DEF	5.160	Increasing	Road Sign	03-01-16	9.95385	78.05255
NH00xx	ABC-DEF	5.356	Decreasing	Road Sign	03-01-16	9.93102	78.05648
NH00xx	ABC-DEF	8.402	Decreasing	Road Sign	03-01-16	9.91229	78.04961

NH00xx	ABC-DEF	10.966	Decreasing	Road Sign	03-01-16	9.89041	78.03458

1.15 Wayside Amenities

The following table lists the fields which need to be populated for the 'Wayside Amenities' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Wayside Amenity	Wayside amenities classified into one of the below categories: Bus shelter; Culverts; Restaurant/Motel; Toilet/Public convenience; Rest Rooms for short stay; Toll Plaza; First aid/Medical centre;	Restaurant/Motel
Field	Description	Example
	Telephone booth; Petrol pump/minor repair shop (optional); Police Station; Temple /Mosque; Bridges.	
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Data Source		
Remarks		
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Chainage	Direction	Wayside Amenity	Survey Date	Data Source	Remarks	Latitude	Longitude
NH00xx	ABC-DEF	0.650	Increasing	Restaurant/Motel	05-01-16			9.98897	78.02671
NH00xx	ABC-DEF	1.998	Increasing	Restaurant/Motel	05-01-16			9.98444	78.02934
NH00xx	ABC-DEF	5.524	Increasing	Petrol Pump	05-01-16			9.98341	78.03004

NH00xx	ABC-DEF	11.413	Increasing	Restaurant/Motel	05-01-16			9.98107	78.03078

1.16 Land Use

The following table lists the fields which need to be populated for the 'Land Use' attribute.
The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Land Use	Land use classified into one of the below categories: Residential; Commercial; Industrial; Agricultural; Water bodies; Mixed.	Commercial
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Field	Description	Example
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	SectionCode	StartChainage	EndChainage	Direction	LandUse	SurveyDate	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.797	Increasing	Mixed	03-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.511	0	Decreasing	Mixed	03-01-16	9.98444	78.02934
NH00xx	ABC-DEF	0.797	2.699	Increasing	Mixed	03-01-16	9.98341	78.03004
NH00xx	ABC-DEF	0.835	0.511	Decreasing	Mixed	03-01-16	9.98107	78.03078
NH00xx	ABC-DEF	0.987	0.835	Decreasing	Mixed	03-01-16	9.96328	78.04160
NH00xx	ABC-DEF	1.641	0.987	Decreasing	Agriculture	03-01-16	9.95385	78.05255
NH00xx	ABC-DEF	2.081	1.641	Decreasing	Barren Land	03-01-16	9.93102	78.05648
NH00xx	ABC-DEF	2.378	2.081	Decreasing	Agriculture	03-01-16	9.91229	78.04961

NH00xx	ABC-DEF	2.458	2.378	Decreasing	Agriculture	03-01-16	9.89041	78.03458
NH00xx	ABC-DEF	2.699	3.234	Increasing	Agriculture	03-01-16	9.88489	78.02995

SECTION 2 - ROAD CONDITION DATA

Road condition data consists of parameters which directly affect maintenance requirements of the road. These parameters are dynamic in nature, and therefore a survey to update this dataset shall be conducted annually for FWD testing and every six months as per Annexure IV for network survey vehicle testing. The first survey shall be conducted at the time of completion testing and the remaining surveys shall be conducted as per the defined frequency.

As an example, if majority of highway length (>50%) passes through a state, where defined survey months are May and November, if completion testing is conducted in April, then the first network survey shall be conducted in the month of April. This shall be considered as the network survey to be conducted in the month of May. The 2nd survey shall be conducted in the month of November, the 3rd survey shall be conducted in the month of May and so on. As regards FWD, the first test/survey shall be conducted at the time of completion in April. The 2nd test/survey shall be conducted in April of next year and so on.

The road condition data shall be used to update specific worksheets, which are listed below.

2.1 Visual condition

The following table lists the fields which need to be populated for the 'Visual Condition' attribute. The descriptions of the fields are given below.

NH Number	New National Highway number	NH0065

Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing

Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Ravelling	Percent of pavement area affected by ravelling, which is converted to the following rating scale: 1 - Very Poor (> 30%) 2 - Poor (11-30%) 3 - Fair (6-10%) 4 - Good (1-5%) 5 - Very Good (0%)	2
Pot Holes	No. of potholes, which is converted to the following rating scale: 1 - Very Poor (> 5) 2 - Poor (3-5) 3 - Fair (2) 4 - Good (1) 5 - Very Good (0)	1
Edge Break	Pavement area containing edge breaks, which is converted to the following rating scale: 1 - Very Poor (> 5m2) 2 - Poor (1-5m2) 3 - Fair (0.5-1m2) 4 - Good (0-0.5m2) 5 - Very Good (0m2)	3
Cracking	Percent of pavement area affected by cracking, which is converted to the following rating scale: 1 - Very Poor (> 30%) 2 - Poor (21-30%) 3 - Fair (11-20%) 4 - Good (5-10%) 5 - Very Good (<5%)	3
Disintegration	Percent of pavement area affected by disintegration, which is converted to the following rating scale: 1 - Very Poor (> 50%) 2 - Poor (20-50%) 3 - Fair (10-20%) 4 - Good (1-10%) 5 - Very Good (<1%)	2
Field	Description	Example

Depression	Percent of pavement area affected by depression, which is converted to the following rating scale: 1 - Very Poor (> 5%) 2 - Poor (3-5%) 3 - Fair (1-2%) 4 - Good (0-1%) 5 - Very Good (0)	5
Bleeding	Percent of pavement area affected by bleeding, which is converted to the following rating scale: 1 - Very Poor (> 50%) 2 - Poor (20-50%) 3 - Fair (10-20%) 4 - Good (1-10%) 5 - Very Good (<1%)	3
Patching	Percent of pavement area affected by patching, which is converted to the following rating scale: 1 - Very Poor (> 30%) 2 - Poor (16-30%) 3 - Fair (6-15%) 4 - Good (2-5%) 5 - Very Good (<2%)	4
Drain Condition	Condition of the drain, which is converted to the following rating scale: 1 - Poor 2 - Fair 3 - Good	2
Shoulder Condition	Condition of the shoulder, which is converted to the following rating scale: 1 - Poor 2 - Fair 3 - Good	Fair
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	Section	Start Chainage	End Chainage	Direction	Lane Number	Ravelling	PotHoles	EdgeBreak	Cracking
NH00xx	ABC-DEF	0.000	0.500	Increasing	L1	4	4	4	4
NH00xx	ABC-DEF	0.500	1.000	Increasing	L1	4	4	4	5
NH00xx	ABC-DEF	1.000	1.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	1.500	2.000	Increasing	L1	5	5	5	5

NH00xx	ABC-DEF	2.000	2.500	Increasing	L1	5	5	5	5
NH00xx	ABC-DEF	2.500	3.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	3.000	3.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	3.500	4.000	Increasing	L1	5	4	3	5
NHNumber	Section	Start Chainage	End Chainage	Direction	Lane Number	Ravelling	PotHoles	EdgeBreak	Cracking
NH00xx	ABC-DEF	4.000	4.500	Increasing	L1	4	4	4	5
NH00xx	ABC-DEF	4.500	5.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	5.000	5.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	5.500	6.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	6.000	6.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	6.500	7.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	7.000	7.500	Increasing	L1	5	5	5	5
NH00xx	ABC-DEF	7.500	8.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	8.000	8.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	8.500	9.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	9.000	9.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	9.500	10.000	Increasing	L1	5	5	3	5

(table continued...)

Disintegration	Depression	Bleeding	Patching	Drain Condition	ShoulderCondition	Date of Survey	Latitude	Longitude
4	4	4	4	2	2	06-05-17	9.98897	78.02671
4	4	4	4	2	2	06-05-17	9.98444	78.02934
5	5	5	4	2	2	06-05-17	9.98341	78.03004
5	5	5	5	2	2	06-05-17	9.98107	78.03078
5	5	5	5	2	2	06-05-17	9.96328	78.04160
5	5	5	5	2	2	06-05-17	9.95385	78.05255
5	5	5	5	2	3	06-05-17	9.93102	78.05648
4	4	4	4	2	3	06-05-17	9.91229	78.04961

4	4	4	4	2	2	06-05-17	9.89041	78.03458
5	5	5	5	2	2	06-05-17	9.88489	78.02995
5	5	5	5	2	2	06-05-17	9.87474	78.02828
5	5	5	5	2	2	06-05-17	9.87363	78.02744
5	5	5	5	2	2	06-05-17	9.84857	78.01535
5	5	5	5	2	2	06-05-17	9.83764	78.00392
5	5	5	5	2	2	06-05-17	9.83711	77.98576
5	5	5	5	1	2	06-05-17	9.83386	77.97729
5	5	5	5	2	2	06-05-17	9.81804	77.97875
5	5	5	5	2	2	06-05-17	9.77426	77.98129
5	4	4	4	2	2	06-05-17	9.73071	77.97999
5	5	5	3	2	2	06-05-17	9.68686	77.97017

2.2 Roughness

The following table lists the fields which need to be populated for the 'Roughness' attribute.
The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Field	Description	Example
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
LwpIri	International roughness index (IRI) of left wheel path measured from laser profilometer	2.33
RwpIri	International roughness index (IRI) of right wheel path measured from laser profilometer	1.97
LaneIri	Average of the International roughness index (IRI) of left and right wheel paths	2.15
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897

Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Lwp Iri	Rwp Iri	Lane Iri	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.1	Increasing	L1	3.31	5.16	4.24	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.1	0.2	Increasing	L1	2.81	3.54	3.18	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	0.2	0.3	Increasing	L1	2.31	1.92	2.12	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	0.3	0.4	Increasing	L1	2.17	2.37	2.27	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	0.4	0.5	Increasing	L1	2.11	1.72	1.92	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	0.5	0.6	Increasing	L1	2.33	1.97	2.15	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	0.6	0.7	Increasing	L1	2.37	2.00	2.19	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	0.7	0.8	Increasing	L1	2.15	2.17	2.16	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	0.8	0.9	Increasing	L1	2.45	2.05	2.25	32	06-05-17	9.89041	78.03458
NH00xx	ABC-DEF	0.9	1.0	Increasing	L1	2.18	2.51	2.35	48	06-05-17	9.88489	78.02995

2.3 Rutting

The following table lists the fields which need to be populated for the 'Rutting' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
Field	**Description**	**Example**
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1

Rutting Left	Rut depth in mm, measured from left wheel path	20
Rutting Right	Rut depth in mm, measured from left wheel path	18
Rutting Avg	Average rut depth measured from left and right wheel paths	19
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Rutting Left	Rutting Right	Rutting Avg	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	15	14	15	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	20	18	19	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	10	8	9	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	5	6	6	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	10	10	10	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	7	5	6	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	3.0	3.5	Increasing	L1	20	18	19	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	L1	5	5	5	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	L1	5	5	5	32	06-05-17	9.89041	78.03458

2.4 Texture Depth

The following table lists the fields which need to be populated for the 'Texture Depth' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
Field	Description	Example

End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Texture Left	Texture depth of pavement in mm, measured from left wheel path	0.40
Texture Right	Texture depth of pavement in mm, measured from left wheel path	0.30
Texture Average	Average texture depth measured from left and right wheel paths	0.35
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Texture Left	Texture Right	Texture Average	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	0.40	0.30	0.35	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	0.60	0.50	0.55	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	0.80	0.90	0.85	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	0.40	0.40	0.4	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	0.30	0.30	0.3	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	0.70	0.60	0.65	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	3.0	3.5	Increasing	L1	0.40	0.50	0.45	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	L1	0.90	0.80	0.85	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	L1	0.40	0.30	0.35	32	06-05-17	9.89041	78.03458

2.5 Skid Resistance

The following table lists the fields which need to be populated for the 'Skid Resistance' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Field	Description	Example
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Skid Left	Skid resistance of pavement measured as skid number, measured from left wheel path	25
Skid Right	Skid resistance of pavement measured as skid number, measured from left wheel path	24
Skid Average	Average skid resistance measured from left and right wheel paths	24.5
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Skid Left	Skid Right	Skid Average	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	25.0	24.0	24.5	20	06-0517	9.98897	78.02671
NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	23.0	23.0	23.0	37	06-0517	9.98444	78.02934
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	23.0	24.0	23.5	42	06-0517	9.98341	78.03004
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	22.0	22.0	22.0	46	06-0517	9.98107	78.03078
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	20.0	21.0	20.5	42	06-0517	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	24.0	24.0	24.0	49	06-0517	9.95385	78.05255
NH00xx	ABC-DEF	3.0	3.5	Increasing	L1	28.0	28.0	28.0	42	06-0517	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	L1	21.0	21.0	21.0	33	06-0517	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	L1	25.0	24.0	24.5	32	06-0517	9.89041	78.03458

2.6 Falling Weight Deflectometer (FWD)

The following table lists the fields which need to be populated for the 'FWD' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065

Field	Description	Example
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Chainage	Chainage of survey point (in km)	0.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Air Temperature	Air temperature recorded in °C	33
Surface Temperature	Temperature of the pavement surface, recorded in °C	39.3
Peak Load	Peak impulse load, measured in kN	45.7
Deflection0	Surface deflection at the test load center, measured in micron	246
Deflection1	Surface deflection at location 1 from the test load center, measured in micron	110
Distance1	Distance of location 1 from the test load center	300
Deflection2	Surface deflection at location 2 from the test load center, measured in micron	153
Distance2	Distance of location 2 from the test load center	600
Deflection3	Surface deflection at location 3 from the test load center, measured in micron	110
Distance3	Distance of location 3 from the test load center	900
Deflection4	Surface deflection at location 4 from the test load center, measured in micron	76
Distance4	Distance of location 4 from the test load center	1200
Deflection5	Surface deflection at location 5 from the test load center, measured in micron	59
Distance5	Distance of location 5 from the test load center	1500
Deflection6	Surface deflection at location 6 from the test load center, measured in micron	44
Distance6	Distance of location 6 from the test load center	1800
Deflection7	Surface deflection at location 7 from the test load center, measured in micron	35
Distance7	Distance of location 7 from the test load center	2100

Deflection8	Surface deflection at location 8 from the test load center, measured in micron	28
Distance8	Distance of location 8 from the test load center	2400
Elastic Modulus BituminousE1	Elastic modulus of bituminous layer, back calculated in MPa	3359
Elastic Modulus GranularE2	Elastic modulus of granular layer, backcalculated in MPa	396
Elastic Modulus SubGradeE3	Elastic modulus of subgrade, back calculated in MPa	90
Field	Description	Example
Corrected Elastic Modulus BituminousE1	Corrected elastic modulus of bituminous layer in MPa	3424
Corrected Elastic Modulus GranularE2	Corrected elastic modulus of granular layer in MPa	300
CorrectedElasticModulusSubGradeE3	Corrected elastic modulus of subgrade in MPa	69
Bituminous Layer	Thickness of bituminous layer in mm	105
Base Layer	Thickness of base layer in mm	230
GSB Layer	Thickness of GSB layer in mm	200
Subgrade CBR	CBR of subgrade	0.08
BituminousLayerCoefficientA1	Layer coefficient of the bituminous layer	0.36
BaseLayerCoefficientA2	Layer coefficient of the base layer	0.17
GranularBaseLayerCoefficientA3	Layer coefficient of the GSB layer	0.17
Structural Number	Structural number of the pavement	3.86
Modified Structural Number	Modified structural number including contribution from subgrade	4.85
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Chainage	Direction	Lane Number	Air Temperature	Surface Temperature	Peak Load	Deflection 0	Deflection 1	Location 1	Deflection 2
NH00xx	ABC-DEF	0.500	RHS	R2	32.6	43.7	45.7	333	188	300	243
NH00xx	ABC-DEF	1.000	LHS	L1	29.9	32.6	45.4	317	163	300	217
NH00xx	ABC-DEF	1.499	RHS	R1	33.0	39.3	45.7	246	110	300	153

NH00xx	ABC-DEF	2.000	LHS	L2	28.7	32.4	46.0	293	130	300	187
NH00xx	ABC-DEF	2.500	RHS	R2	33.7	45.8	45.3	429	232	300	316
NH00xx	ABC-DEF	3.000	LHS	L1	29.0	33.0	45.7	343	204	300	252
NH00xx	ABC-DEF	3.500	RHS	R1	33.5	45.4	44.5	373	194	300	268
NH00xx	ABC-DEF	4.010	LHS	L2	28.9	33.5	45.0	348	201	300	254
NH00xx	ABC-DEF	4.500	RHS	R2	33.3	40.3	46.0	393	241	300	301

(table continued...)

Location 2	Deflection 3	Location 3	Deflection 4	Location 4	Deflection 5	Location 5	Deflection 6	Location 6	Deflection 7	Location 7	Deflection 8
600	180	900	128	1200	102	1500	75	1800	58	2100	42
600	158	900	104	1200	70	1500	48	1800	38	2100	28
600	110	900	76	1200	59	1500	44	1800	35	2100	28
600	126	900	81	1200	62	1500	44	1800	32	2100	23
600	227	900	152	1200	116	1500	86	1800	71	2100	58
600	196	900	144	1200	117	1500	85	1800	65	2100	48
600	187	900	118	1200	83	1500	47	1800	31	2100	22
600	198	900	135	1200	105	1500	64	1800	42	2100	26
600	231	900	162	1200	123	1500	82	1800	62	2100	46

(table continued...)

Location 8	ElasticModulusBituminousE1	ElasticModulusGranularE2	ElasticModulusSubGradeE3	CorrectedElasticModulusBituminousE1	CorrectedElasticModulusGranularE2	CorrectedElasticModulusSubGradeE3	Bituminous Layer	BaseLayer	GSBLayer	Subgrade CBR
2400	6213	185	100	6447	135	78	105	230	200	0.08
2400	5356	195	100	5295	143	78	105	230	200	0.08
2400	3359	396	90	3424	300	69	105	230	200	0.08
2400	4830	226	100	4770	169	78	105	230	200	0.08

2400	4570	137	97	4781	93	75	105	230	200	0.08
2400	8454	135	100	8374	91	78	105	230	200	0.08
2400	4394	165	100	4590	117	78	105	230	200	0.08
2400	7817	139	96	7762	95	74	105	230	200	0.08
2400	7666	123	95	7847	81	73	105	230	200	0.08

(table continued…)

Bituminous Layer Coefficient A1	Base Layer CoefficientA2	Granular Base Layer Coefficient A3	Structural Number	Modified Structural Number	Survey Date	Latitude	Longitude
0.45	0.13	0.13	3.68	4.82	01-07-16	9.98897	78.02671
0.42	0.13	0.13	3.56	4.70	23-06-16	9.98444	78.02934
0.36	0.17	0.17	3.86	4.85	01-07-16	9.98341	78.03004
0.41	0.14	0.14	3.65	4.79	23-06-16	9.98107	78.03078
0.41	0.11	0.11	3.24	4.34	01-07-16	9.96328	78.04160
0.49	0.11	0.11	3.58	4.72	23-06-16	9.95385	78.05255
0.40	0.12	0.12	3.34	4.48	01-07-16	9.93102	78.05648
0.48	0.12	0.12	3.67	4.75	23-06-16	9.91229	78.04961
0.48	0.11	0.11	3.53	4.59	01-07-16	9.89041	78.03458

2.7 Falling Weight Deflectometer (FWD) Rigid

The following table lists the fields which need to be populated for the 'FWD Rigid' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (HyderabadVijayawada)
Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc.	L2
Air Temperature	Air temperature recorded in °C	30.1
Surface Temperature	Temperature of the pavement surface, recorded in °C	39.4

Peak Load	Peak impulse load, measured in kN	103.7
Deflection1	Surface deflection at the test load center, measured in micron	140
Deflection2	Surface deflection at 300 mm from the test load center, measured in micron	121
Deflection3	Surface deflection at 600 mm from the test load center, measured in micron	108
Deflection4	Surface deflection at 900 mm from the test load center, measured in micron	101
Concrete Slab Thicknessh	Thickness of concrete slab, measured in mm	300
Area of Deflection Basin	Area of deflection basin, calculated from measured deflections, in cm2	761
Radius of Relative Stiffness	Radius of relative stiffness, calculated in mm	823
NormalizedDeflectiond 1	Normalized deflection at location 1, in mm	3.1
NormalizedDeflectiond 2	Normalized deflection at location 2, in mm	2.9
NormalizedDeflectiond 3	Normalized deflection at location 3, in mm	2.4
NormalizedDeflectiond 4	Normalized deflection at location 4, in mm	1.9
Modulus of Subgrade Reaction k	Modulus of subgrade reaction, measured in MPa/m	131
Elastic Modulus of Concrete Ec	Elastic modulus of concrete, calculated in MPa	26118
Cube Strength of Concrete fck	Cube strength of concrete, calculated inMPa	27
Flexural strength of concrete fmr	Flexural strength of concrete, calculated in MPa	3.7
Date Of Testing	Date of testing in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH No	Section Code	Chain--age	Direction	Lane No.	Air Temperature	Surface Temperature	Peak Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Concrete Slab Thickness h
NH00x x	ABC-DEF	0.0	LHS	L2	29.0	34.9	104.1	167	143	130	119	300
NH00x x	ABC-DEF	0.5	RHS	R2	30.5	38.1	104.4	141	130	122	115	300
NH00x x	ABC-DEF	1.0	LHS	L1	30.0	35.6	105.2	147	111	100	91	300
NH00x x	ABC-DEF	1.5	RHS	R1	28.9	38.3	102.4	140	126	116	107	300

NH00x x	ABC-DEF	2.0	LHS	L2	30.1	39.4	103.7	140	121	108	101	300
NH00x x	ABC-DEF	2.5	RHS	R2	29.0	37.5	104.6	150	134	126	117	300
NH00x x	ABC-DEF	3.0	LHS	L1	30.6	38.9	102.7	124	109	104	92	300
NH00x x	ABC-DEF	3.5	RHS	R1	29.3	39.1	105.9	149	136	128	119	300
NH00x x	ABC-DEF	4.5	RHS	R2	30.3	41.0	104.9	138	127	121	114	300

(table continued...)

Area of Deflecti on Basin	Radius of Relative Stiffness	Normaliz ed Deflectio n d1	Normaliz ed Deflectio n d2	Normaliz ed Deflectio n d3	Normaliz ed Deflectio n d4	Modulu s of Subgra de Reactio n k	Elastic Modulu s of Concre te Ec	Cube Strengt h of Concre te fck	Flexura l strengt h of concre te fmr	Date Of Testin g	Latitu de	Longitu de
759	816	3	3	2	2	112	21590	19	3	25-0616	9.9889 7	78.0267 1
821	1214	3	3	3	2	62	58161	135	8	28-0616	9.9844 4	78.0293 4
684	580	3	3	2	1	246	12051	6	2	25-0616	9.9834 1	78.0300 4
796	1014	3	3	3	2	87	39783	63	6	28-0616	9.9810 7	78.0307 8
761	823	3	3	2	2	131	26118	27	4	25-0616	9.9632 8	78.0416 0
800	1040	3	3	3	2	79	39908	64	6	28-0616	9.9538 5	78.0525 5
789	971	3	3	3	2	107	41290	68	6	25-0616	9.9310 2	78.0564 8
814	1150	3	3	3	2	66	50086	100	7	28-0616	9.9122 9	78.0496 1
826	1257	3	3	3	2	59	64082	164	9	28-0616	9.8904 1	78.0345 8

SECTION 7: DRAFT FORM OF CONTRACT

CONTRACT FOR CONSULTANT'S SERVICES

Between

_____

(Name of Client)

And

_____

(Name of Consultant)

Dated:

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1. FORM OF CONTRACT

COMPLEX TIME BASED ASSIGNMENTS

This CONTRACT (hereinafter called the "Contract") is made the_____ day of the Month of _____, 201__, between, on the one hand _____(hereinafter Called the "Client) and, on the other hand _____ hereinafter called the "Consultants")

[Note*: If the Consultants consist of more than one entity, the above should be partially amended to read as follows:

"…(hereinafter called the "Client")and, on the other hand, a joint venture consisting of the following entities, each of which will be jointly severally liable to the Client for all the Consultants' obligations under this Contract, namely,

_____and

_____(hereinafter called" Consultants")]

WHEREAS

(a) the Client has requested the Consultants to provide certain consulting services as defined in the General Conditions of Contract attached to this Contract (hereinafter called the "Services");

(b) the Consultants, having represented to the Client that they have the required processional skills ,and personnel and technical resources ,have agreed to provide the Services on the terms and conditions set forth in this Contract;

NOW THEREFORE the parties hereto hereby agree as follows:

1. The following documents attached hereto shall be deemed to form an integral part of this Contract:

(a) The General Conditions of Contract (hereinafter called "GC")'

(b) The Special Conditions of Contract (hereinafter called "SC");

(c) The following Appendices:

[Note: If any of these Appendices are not used, the words "Not Used" should be inserted below next to the title of the Appendix on the sheet attached hereto carrying the title of that Appendix].

Appendix A	:	Description of the Services
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Appendix-M	:	**(Deleted)** Memorandum of Understanding (in case of JV)

2. The mutual rights and obligations of the Client and the Consultants shall be as set forth in the Contract; in particular

(a) The Consultants shall witness and certify the Services in accordance with the provisions of the Contract; and

(b) The Client shall make payments to the Consultants in accordance with the Provisions of the Contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year first above written.

FOR AND ON BEHALF OF
[NAME OF THE CLIENT]

By

(Authorized Representative)

FOR AND ON BEHALF OF
[NAME OF THE CONSULTANTS]

By

(Authorized Representative)

[Note: If the Consultants consist of more than one entity, all of these entities should appear as signatures, e.g. in the following manner]

FOR AND ON BEHALF OF EACH OF
THE MEMBERS OF THE CONSULTANTS

[Name of the Member]

By

(Authorized Representative)

[Name of the Member]

By

(Authorized Representative)

GENERALCONDITIONS OF CONTRACT

1. General Provisions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

1.1 Definitions

(a) "Applicable Law" means the laws and any other instruments having the force of law in the Government's country [or in such other country as may be specified in the Special Conditions of Contract (SC)], as they may be issued and in force from time to time.

(b) "Contract means the Contract signed by the Parties, to which these General Conditions of Contract are attached, together with all the documents listed in Clause 1 of such signed Contract;

(c) "Effective Date' means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1;

(d) 'Foreign currency' means any currency other than the currency of the Government;

(e) 'GC means these General Conditions of Contract;

(f) "Government" means the Government of Client's Country;

(g) 'Local currency' means the Indian Rupees;

(h) "Consultant" wherever mentioned in this Contract Agreement means the "Authority Engineer (AE)" and includes sub-consultants or Associates engaged by the primary consultant.

(i) "Member", in case the Consultants consist of a joint venture of more than one entity, means any of these entities, and "Members" means all of these entities;

(j) "Party' means the Client or the Consultants, as the case may be, and Parties means both of them;

(k) "Personnel" means persons hired by the Consultants or by any Sub-Consultants and or Associates as Employees and assigned to the performance of the Services

Or any part thereof; "Foreign Personnel" means such persons who at the time of being so hired had their domicile outside the Government's Country, "Local Personnel" means such persons who at the time of being so hired had their domicile inside the Government's Country; and 'key personnel' means the personnel referred to in Clause GC 4.2 (a).

(l) "SC" means the Special Conditions of Contract by which these General Conditions of Contract may be amended or supplemented;

(m) "Services" means the work to be performed by the Consultants pursuant to his contract, as described in Appendix A hereto. The scope of work will be strictly as given in various Clauses in TOR. The approach and methodology to be adopted by the Consultant for carrying out the assignment as Authority Engineer may be modified depending on the site requirements and work programme of the EPC Contract or after mutual discussions with

Employer, the EPC Contractor and the Authority Engineer. The work plan as indicated by the Consultant may be modified accordingly to the site requirements.

(n) "Sub-Consultant and or Associates "means any entity to which the Consultants subcontract any part of the Services in accordance with the provisions of Clause GC 3.7; and

(o) "Third Party" means any person or entity other than the Government, the Client, the Consultants or a Sub-consultant.

1.2 Relation between the Parties

Nothing contained herein shall be construed as establishing a relation of master and servant or of principal and agent as between the Client and the Consultants. The Consultants, subject to this Contract, have complete charge of Personnel and Subconsultants, if any, performing the Services and shall be fully responsible for the Services performed by them or on their behalf hereunder.

1.3 Law Governing Contract

This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law.

1.4 Language

This Contract has been executed in the language specified in the SC, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract.

1.5 Headings

The headings shall not limit, alter or affect the meaning of this Contract.

1.6 Notices

1.6.1 Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telegram or facsimile to such Party at the address specified in the SC.

1.6.2 Notice will be deemed to be effective as specified in the SC.

1.6.3 A Party may change its address for notice hereunder by giving the other Party notice of such change pursuant to the provisions listed in the SC with respect to Clause GC 1.6.2.

1.7 Location

The Services shall be performed at such locations as are specified in Appendix A hereto and, where the location of a particular task is not so specified, at such locations whether in Government's Country or elsewhere, as the Client may approve.

1.8 Authority of Member in Charge

In case the Consultants consist of a joint venture of more than one entity, the Members hereby authorize the entity specified in the SC to act on their behalf in exercising all the Consultants' rights and obligations towards the Client under this Contract, including without limitation the receiving of instructions and payments from the Client.

1.9 Authorized Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed, under this Contract by the Client or the Consultants may be taken or executed by the officials specified in the SC.

1.10 Taxes and Duties

Unless otherwise specified in the SC, the Consultants, Sub-consultants and Personnel shall pay such taxes, duties, fees and other impositions as may be levied under the Applicable Law. Goods &Service tax as applicable shall be paid to the Authority's Engineer while making payment for services rendered. The consultants shall then deposit the same with the tax authorities and provide a proof of having done so within next 90 days in line with policy circulars issued by Employer.

2. Commencement, Completion, Modification and Termination of Contract

2.1 Effectiveness of Contract

This Contract shall come into force and effect on the date (the" Effective Date") of the Client's notice to the Consultants instructing the Consultants to begin carrying out the Services. This notice shall confirm that the effectiveness conditions, if any, listed in the SC have been met.

2.2 Termination of Contract for Failure to Become Effective

If this Contract has not become effective within such time period after the date of the Contract signed by the Parties as shall be specified in the SC, either Party may, by not less than four (4) weeks' written notice to the other Party, declare this Contract to be null and void, and in the event of such a declaration by either Party, neither Party shall have any claim against the other Party with respect hereto.

2.3 Commencement of Services

The Consultants shall begin carrying out the Services at the end of such time period after the Effective Date as shall be specified in the SC.

2.4 Expiration of Contract

Unless terminated earlier pursuant to Clause GC2.9 hereof, this Contract shall expire when services have been completed and all payments have been made at the end of such time period after the Effective Date as shall be specified in the SC.

2.5 Entire Agreement

This Contract contains all covenants, stipulations and provisions agreed by the Parties. No agent or representative of either Party has authority to make, and the Parties shall not be bound by or be liable for, any statement, representation, promise or agreement not set forth herein.

2.6 Modification

Modification of the terms and conditions of this Contract, including any modification of the scope of the Services, may only be made by written agreement between the Parties as the case may be, has been obtained. Pursuant to Clause GC 7.2 hereof, however, each Party shall give due consideration to any proposals for modification made by the other Party.

2.7 Force Majeure

2.7.1 Definition

(a) For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party, and which makes a Party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.

(b) Force Majeure shall not include (i) any event which is caused by the negligenceorintentionalactionofapartyorsuchParty'sSub-consultantsor agents or employees, nor (ii) any event which a diligent Party could reasonably have been expected to both(A) take in to account at the time of the conclusion of this Contract and(B) avoid or overcome in the carrying out of its obligations hereunder .

(c) Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

2.7.2 No Breach of Contract

The failure of a Party to fulfill any of its obligations hereunder shall not be considered to be a breach of, or default under, this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due care "and reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Contract.

2.7.3 Measures to be taken

(a) A Party affected by an event of Force Majeure shall take all reasonable measures to remove such Party's inability to fulfill its obligations hereunder with a minimum of delay.

(b) A Party affected by an event of Force Majeure shall notify the other Party of such event as soon as possible, and in any event not later than fourteen (14) days following

the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give notice of the restoration of normal conditions as soon as possible.

(c) The Parties shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

2.7.4 Extension of Time

Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

Extension of Time for providing services of the Authority's Engineer shall be extended concurrently with the Extension of Time granted, if any, to the EPC Contractor for the project, subject to satisfactory performance of the Authority's Engineer.

2.7.5 Payments

During the period of their inability to perform the Services as a result of an event of Force Majeure, the Consultants shall be entitled to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of the Services and in reactivating the Services after the end of such period.

2.7.6 Consultation

Not later than thirty (30) days after the Consultants, as the result of an event of Force Majeure, have become unable to perform a material portion of the Services, the Parties shall consult with each other with a view to agreeing on appropriate measures to be taken in the circumstances.

2.8 Suspension

The Client may, by written notice of suspension to the Consultants, suspend all payments to the Consultants hereunder if the Consultants fail to perform any of their obligations under this Contract, including the carrying out of the Services, provided that such notice of suspension (i) shall specify the nature of the failure, and (ii) shall request the Consultants to remedy such failure within a period not exceeding thirty (30) days after receipt by the Consultants of such notice of suspension.

2.9 Termination

2.9.1 By the Client

The Client may, by not less than thirty (30)days' written notice of termination to the Consultants (except in the event listed in paragraph (f) below, for which there shall be a written notice of not less than sixty (60) days), such notice to be given after the occurrence of any of the events specified in paragraphs(a)through(h)of this Clause GC 2.9.1, terminate this Contract.

(a) if the Consultants fail to remedy a failure in the performance of their obligations hereunder, as specified in a notice of suspension pursuant to Clause GC 2.8 herein above, within thirty (30) days of receipt of such notice of suspension or within such further period as the Client may have subsequently approved in writing;

(b) If the Consultants become (or, if the Consultants consist of more than one entity, if any of their members becomes) in solvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary;

(c) If the Consultants fail to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause GC 8 hereof;

(d) If the Consultants submit to the Client a statement which has a material effect on the rights, obligations or interests of the Client and which the Consultants know to be false;

(e) if, as the result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or

(f) if the Client, in its sole discretion and for any reason whatsoever, decides to terminate this Contract.

(g) if the consultant, in the judgment of the Client has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. For the purpose of this clause:

"corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the selection process or in contract execution.

"fraudulent practice" means a misrepresentation of facts in order to influence a selection process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among consultants (prior to or after submission of proposals) designed to establish prices at artificial noncompetitive levels and to deprive the Borrower of the benefits of free and open competition.

(h) if EPC Contractor represents to Employer that the Consultant is not discharging his duties in a fair, efficient and diligent manner and if the dispute remains unresolved, Employer may terminate this contract.

2.9.2 By the Consultants

The Consultants may, by not less than thirty (30) days' written notice to the Client, such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause GC2.9.2, terminate this Contract:

(a) if the Client fails to pay any money due to the Consultants pursuant to this Contract and not subject to dispute pursuant to Clause 8 hereof within fortyfive (45) days after receiving written notice from the Consultants that such payment is overdue;

(b) if the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Consultants may

have subsequently approved in writing) following the receipt by the Client of the Consultants' notice specifying such breach;

(c) if, as the result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or

(d) if the Client fails to comply with any final decision reached as a result of arbitration pursuant to Clause GC 8 hereof.

2.9.3. Cessation of Rights and Obligations

Upon termination of this Contract pursuant to Clauses GC 2.2 or GC 2.9 hereof, or upon expiration of this Contract pursuant to Clause GC2.4 hereof, all rights and obligations of the Parties hereunder shall cease, except:

(i) such rights and obligations as may have accrued on the date of termination or expiration;

(ii) the obligation of confidentiality set forth in Clause GC 3.3 hereof;

(iii) the Consultants' obligation to permit inspection, copying and auditing of their accounts and records set forth in Clause GC 3.6 (ii) hereof; and

(iv) any right which a Party may have under the Applicable Law

2.9.4 Cessation of Services

Upon termination of this Contract by notice of either Party to the other pursuant to Clauses GC2.9.1 or GC2.9.2 hereof, the Consultants shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum. With respect to documents prepared by the Consultants and equipment and materials furnished by the Client, the Consultants shall proceed as provided, respectively, by Clauses GC 3.9 or GC 3.10 hereof.

2.9.5 Payment upon Termination

Upon termination of this Contract pursuant to Clauses GC 2.9.1 or GC 2.9.2 hereof, the Client shall make the following payments to the Consultants {after offsetting against these payments any amount that may be due from the Consultant to the Client}:

(a) remuneration pursuant to Clause GC 6 hereof for Services satisfactorily performed prior to the effective date of termination;

(b) reimbursable expenditures pursuant to Clause GC 6 hereof for expenditures actually incurred prior to the effective date of termination; and

(c) except in the case of termination pursuant to paragraphs (a) through(d) of Clause GC2.9.1 hereof, reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract including the cost of there turn travel of the Consultants' personnel and their eligible dependents.

2.9.6. Disputes about Events of Termination

If either Party disputes whether an event specified in paragraphs (a) through (e) of Clause GC 2.9.1or in Clause GC2.9.2 hereof has occurred, such Party may, within fortyfive (45) days after receipt of notice of termination from the other Party, refer the matter to arbitration pursuant to Clause GC8 hereof, and this Contract shall not be terminated on account of such event except in accordance with the terms of any resulting arbitral award.

3. Obligation of the Consultants

3.1 General

3.1.1 Standard of Performance

The Consultants shall perform the Services and witness and certify their obligations hereunder with all due diligence, efficiency and economy, in accordance with generally accepted professional techniques and practices, and shall observe sound management practices, and employ appropriate advanced technology and safe and effective equipment, machinery, materials and methods "The Consultants shall always" act, in respect of any matter relating to this Contract or to the Services, as faithful advisers to the Client, and shall at all times support and safeguard the Client's legitimate interests in any dealings with Sub-consultants or Third Parties.

3.1.2 Law Governing Services

The Consultants shall perform the Services in accordance with the Applicable Law and shall take all practicable steps to ensure that any Sub- consultants and or Associates, as well as the Personnel of the Consultants and any Sub-consultants and or Associates, comply with the Applicable Law. The Client shall advise the Consultants in writing of relevant local customs and the Consultants shall, after such notifications, respect such customs.

3.2 Conflict of Interests

3.2.1 Consultants Not to Benefit from Commissions, Discounts, etc.

The Remuneration of the Consultants pursuant to Clause GC6 hereof shall constitute the Consultants' sole remuneration in connection with this Contract or the Services and, subject to ClauseGC3.2.2 hereof, the Consultants shall not accept for their own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations hereunder, and the Consultants shall use their best efforts to ensure that any Sub-consultants and or Associates, as well as the Personnel and agents of either of them, similarly shall not receive any such additional remuneration.

3.2.2 If the Consultants, as part of the Services, have the responsibility of advising the Client on the procurement of goods, works or services, the Consultants shall comply with any applicable procurement guidelines of the Client (Employer)and or Associates Bank or of the Association, as the case maybe, and other funding agencies and shall at all times exercise such responsibility in the best interest of the Client. Any discounts or commissions obtained

by the Consultants in the exercise of such procurement responsibility shall be for the account of the Client.

3.2.3 Consultants and Affiliates Not to engage in Certain Activities

The Consultants agree that, during the term of this Contract and after its termination, the Consultants and any entity affiliated with the Consultants, as well as any Sub- Consultant and or Associates and any entity affiliated with such Sub Consultant and or Associates, shall be disqualified from providing goods works or services (other than the Services and any continuation thereof) for any project resulting from or closely related to the Services. .

3.2.4 Prohibition of Conflicting Activities

The Consultants shall not engage, and shall cause their Personnel as well as their Sub-consultants and or Associates and their Personnel not to engage, either directly or indirectly, in any of the following activities:

(a) during the term of this Contract, any business or professional activities in the Government's country which would conflict with the activities assigned to them under this Contract; and

(b) after the termination of this Contract, such other activities as may be specified in the SC.

3.3 Confidentiality

The Consultants, their Sub-consultants and the Personnel of either of them shall not, either during the term or within two (2) years after the expiration of this Contract, disclose any proprietary or confidential information relating to the Project, the Services, this Contract or the Client's business or operations without the prior written consent of the Client.

3.4 Liability of the Consultants

Subject to additional provisions, if any, set forth in the SC, the Consultants' liability under this Contract shall be as provided by the Applicable Law.

3.5 Insurance to be Taken Out by the Consultants

The Consultants (i) shall take out and maintain, and shall cause any Sub-consultants to take out and maintain, at their (or the Sub-consultants', as the case may be) own cost but on terms and conditions approved by the Client, insurance against the risks, and for the coverages, as shall be specified in the SC, and (ii) at the Client's request, shall provide evidence to the Client showing that such insurance has been taken out and maintained and that the current premiums therefore have been paid.

3.6 Accounting, Inspection and Auditing

The Consultants(i)shall keep accurate and systematic accounts and records in respect of the Services, hereunder, in accordance with internationally accepted accounting principles and in such form and detail as will clearly identify all relevant time charges and cost, and the bases thereof (including such bases as may be specifically referred to in the SC) ; (ii) shall

permit the Client or its designated representative periodically, and up to one year from the expiration or termination of this Contract, to inspect the same and make copies thereof as well as to have them audited by auditors appointed by the Client; and (iii) shall permit the client to inspect the Consultant's accounts and records relating to the performance of the Consultant and to have them audited by auditors appointed by the client.

3.7 Consultants' Actions Requiring Client's Prior Approval

The Consultants shall obtain the Client's prior approval in writing before taking any of the following actions:

(a) appointing such members of the Personnel as are listed in Appendix 'C' ("Consultants' Sub-consultants' Key Personnel") merely by title but not by name;

(b) entering into a subcontract for the performance of any part of the Services, it being understood (i) that the selection of the Sub-Consultant and the terms and conditions of the subcontract shall have been approved in writing by the Client prior to the execution of the subcontract, and (ii) that the Consultants shall remain fully liable for the performance of the Services by the Sub-Consultant and its Personnel pursuant to this Contract; and

(c) any other action that may be specified in the SC

3.8 Reporting Obligations

The Consultants shall submit to the Client the reports and documents specified in Appendix B here to, in the form, in the numbers and within the time periods set forth in the said Appendix.

3.9 Documents Prepared by the Consultants to Be the Property of the Client

All plans, drawings, specifications, designs, reports, other documents and software prepared by the Consultants for the Client under this Contract shall become and remain the property of the Client, and the Consultants shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Client, together with a detailed inventory thereof. The Consultants may retain a copy of such documents and software. Restrictions about the future use of these documents and software, if any, shall be specified in the SC.

3.10 Equipment and Materials Furnished by the Client

Equipment and materials made available to the Consultants by the Client, or purchased by the Consultants with funds provided by the Client, shall be the property Of the Client and shall be marked accordingly. Upon termination or expiration of this Contract, the Consultants shall make available to the Client an inventory of such equipment and materials and shall dispose of- such equipment and materials in accordance with the Client's instructions. While in possession of such equipment and materials, the Consultants, unless otherwise instructed by the Client in writing, shall insure them at the expense of the Client in an amount equal to their full replacement value.

4. Consultants' Personnel and Sub-consultants and or Associates

4.1 General

The Consultants shall employ and provide such qualified and experienced Personnel and Sub-consultants as are required to witness and certify the Services.

4.2 Description of Personnel

(a) The titles, agreed job descriptions, minimum qualification and estimated periods of engagement in the carrying out of the Services of each of the Consultants' Key Personnel are described in Appendix C. If any of the Key Personnel has already been approved by the clients his/her name is listed as well.

(b) If required to comply with the provisions of Clause GCC 3.1.1 hereof, adjustments with respect to the estimated periods "of engagement of Key Personnel set forth in Appendix C may be made by the Consultants by written notice to the Client, provided (i) that such adjustments shall not alter the originally estimated period of engagement of any individual by more than 10% or one week, whichever is larger, and (ii) that the aggregate of such adjustments shall not cause payments under this Contract to exceed the ceilings set forth in Clause GC 6.1(b) of this Contract. Any other such adjustments shall only be made with the Client's written approval.

(c) If additional work is required beyond the scope of the Services specified in Appendix A, the estimated periods of engagement of Key Personnel set forth in Appendix C may be increased by agreement in writing between the Client and the Consultants, provided that any such increase shall not, except as otherwise agreed, cause payments under this Contract to exceed the ceilings set for thin Clause GC 6.1 (b) of this Contract.

4.3 Approval of Personnel

The Key Personnel i.e. Professional Staff and Sub-consultants listed by title as well as By name in Appendix C is hereby approved by the Client. In respect of other Key Personnel which the Consultants propose, to use in the carrying out of the Services, the Consultants shall submit to the client for review and approval a copy of their biographical data and (in the case of Key personnel to be used within the country of the Government) a copy of a satisfactory medical certificate in the form attached here to as Appendix D. If the Client does not object in writing (stating the reasons for the objection) within thirty (30) calendar days from the4 date of receipt of such biographical data and (if applicable) such certificate, such Key Personnel shall be deemed to have been approved by the Client.

4.4 Working Hours, Overtime, Leave, etc.

(a) Working hours and holidays for Key Personnel are set forth in Appendix E hereto. To account for travel time, foreign Personnel carrying out Services inside the Government's country shall be deemed to have commenced (or finished) work in respect of the Services such number of days before their arrival in (or after their departure from) the Government's country as is specified in Appendix E hereto.

(b) The Personnel of all types engaged by Consultant to provide Services on this Contract shall not been titled to be paid for overtime nor to take paid sick leave or vacation leave

except as specified in Appendix E hereto, and except as specified. In such Appendix, the Consultants' remuneration shall be deemed to cover these items. All leave to be allowed to the Personnel is included in the staff-months of service set for in Appendix C. Any taking of leave by Personnel shall be subject to the prior approval by the Client and the Consultants shall ensure that absence for leave purposes will not delay the progress and adequate supervision of the Services.

4.5 Removal and/or Replacement of Personnel

Removal and/or replacement of Key Personnel shall be regulated as under:

4.5.1 In case notice to commence services pursuant to Clause 2.1 of this Contract is not ordered by Client within 120 days of signing of contract the key personnel can excuse themselves on valid grounds, e.g., selection on some other assignment, health problem developed after signing of contract, etc. In such a case no penalty shall be levied on the Firm or on the person concerned. The firm shall however be asked to give a replacement by an equal or better scoring person, whenever mobilization is ordered.

4.5.2 In case notice to commence services is given within 120 days of signing of contract, the Authority expects all the Key Personnel specified in the Proposal to be available during implementation of the Agreement. The Authority will not consider any substitution of Key Personnel except under compelling circumstances beyond the control of the Consultant and the concerned Key Personnel. Such substitution shall be limited to not more than three Key Personnel subject to equally or better qualified and experienced personnel being provided to the satisfaction of the Authority. Replacement of the Team Leader will not normally be considered and may lead to disqualification of the Applicant or termination of the Agreement. Replacement of one Key Personnel shall be permitted subject to reduction of remuneration equal to 5 % (five per cent) of the total remuneration specified for the Key Personnel who is proposed to be replaced. In case of second replacement the reduction in remuneration shall be equal to 10% (ten per cent) and for third and subsequent replacement, such reduction shall be equal to 15% (fifteen per cent). If the consultant finds that any of the personnel had made false representation regarding his qualification and experience, he may request the Employer for replacement of the personnel. There shall be no reduction in remuneration for such replacement. The replacement shall however be of equal or better score. The personnel so replaced shall be debarred from future projects for 2 years.

4.5.4 Replacement after original contract period is over:

There shall be no limit on the replacements and no reduction in remunerations shall be made. The replacement shall however be of equal or better score.

4.5.5 If the Employer (i) finds that any of the Personnel has committed serious misconduct or has been charged with having committed a criminal action or (ii) has reasonable ground to be dissatisfied with the performance of any of the Personnel, then the consultant shall, at the Employer’s written request specifying the grounds therefore, forthwith provide a replacement with qualifications and experience acceptable to him. For such replacement there will be no reduction in remuneration.

4.5.6 If any member of the approved team of a consultant engaged by Bangalore Development Authority leaves the job before completion, he/she shall be barred for a period of 6 months to 24 months from being engaged as a team member of any other consultant working (or to be appointed) for any other Bangalore Development Authority projects.

4.6 Resident Team Leader and Coordinator

The person designated as the Team Leader of the Consultant's Personnel shall be responsible for the coordinated, timely and efficient functioning of the Personnel. In addition, the Consultant shall designate a suitable person from its Head Office as Project Coordinator who shall be responsible for day-to-day performance of the Services.

5. Obligations of the Client

5.1 Assistance and Exemptions

Unless otherwise specified in the SC, the Client shall use its best efforts to ensure that the Government shall:

(a) provide the Consultants, Sub-consultants and Personnel with work permits and such other documents as shall be necessary to enable the Consultants, Sub- consultants or Personnel to perform the Services;

(b) assist for the Personnel and, if appropriate, their eligible dependents to be provided promptly with all necessary entry and exit visas, residence permits, exchange permits and any other documents required for their stay in Government's country;

(c) Facilitate prompt clearance through customs of any property required for the Services and of the personal effects of the Personnel and their -eligible dependents;

(d) Issue to officials, agents and representatives of the Government all such instructions as may be necessary or appropriate for the prompt and effective implementation of the Services;

(e) assist the Consultants and the Personnel and any Sub-consultants and or Associates employed by the Consultants for the Services from any requirement to register or obtain any permit to practice their profession or to establish themselves either individually or as a corporate entity according to the Applicable Law;

(f) grant to the Consultants, any Sub-consultants and or Associates and the Personnel of either of them the privilege, pursuant to the Applicable Law, of bringing into Government's country reasonable amounts of foreign currency for the purposes of the Services or for the personal use of the Personnel and their dependents and of withdrawing any such amounts as may be earned therein by the Personnel in the execution of the Services: and

(g) Provide to the Consultants, Sub-consultants and or Associates and Personnel any such other assistance as may be specified in the SC.

5.2 Access to Land

The Client warrants that the Consultants shall have, free of charge, unimpeded access to all land in the Government's country in respect of which access is required for the performance of the Services. The Client will be responsible for any damage to such land or any property

thereon resulting from such access and will indemnify the Consultants and each of the Personnel in respect of liability for any such damage, unless such damage is caused by the default or negligence of the Consultants or any Sub-Consultant or the Personnel of either of them.

5.3 Change in the Applicable Law

If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost or reimbursable expenses incurred by the Consultants in performing the Services, then the remuneration and reimbursable expenses otherwise payable to the Consultants under this Contract shall be increased or decreased accordingly by agreement between the Parties hereto, and corresponding adjustments shall be made to the ceiling amounts specified in Clause GC 6.1(b).

5.4 Services, Facilities and Property of the Client

The Client shall make available to the Consultants and the Personnel, for the purposes of the services and free of any charge, the services, facilities and property described in Appendix F at the times and in the manner specified in said Appendix F, provided that if such services, facilities and property shall not be made available to the Consultants as and when so specified, the Parties shall agree on (i) any time extension that it may be appropriate to grant to the Consultants for the performance of the Services, (ii) the manner in which the Consultants shall procure any such services, facilities and property from other sources, and (iii) the additional payments, if any, to be made to the Consultants as a result thereof pursuant to Clause GC 6.l(c) hereinafter.

5.5 Payment

In consideration of the Services performed by the Consultants under this Contract, the Client shall make to the Consultants such payments and in such manner as is provided by Clause GC 6 of this Contract.

5.6 Counterpart Personnel

(a) If so provided in Appendix F hereto, the Client shall make available to the Consultants, as and when provided in such Appendix F, and free of charge, such counterpart personnel to be selected by the Client, with the Consultants' advice, as shall be specified in such Appendix F. Counterpart personnel shall work under the exclusive direction of the Consultants. If any member of the counterpart personnel fails to perform adequately any work assigned to him by the Consultants which is consistent with the position occupied by such- member, the Consultants may request the replacement of such member, and the Client shall not unreasonably refuse to act upon such request.

(b) If counterpart personnel are not provided by the Client to the Consultants as and when specified in Appendix F, the Client and the Consultants shall agree on (i) how the affected part of the Services shall be carried out, and (ii) the additional payments, if any, to be made by the Client to the Consultants as a result thereof pursuant to Clause GC 6.1(c) hereof.

6. Payments to the Consultants

6.1 Cost Estimates; Ceiling Amount

(a) An estimate of the cost of the Services payable is set forth in Appendix G.

(b) Except as may be otherwise agreed under Clause GC 2.6 and subject to Clause GC 6.1(c), payments under this Contract shall not exceed the ceilings specified in the SC. The Consultants shall notify the Client as soon as cumulative charges incurred for the Services have reached 80% of these ceilings.

(c) Notwithstanding Clause GC 6.l (b) hereof, if pursuant to clauses GC 5.3, 5.4 or 5.6 hereof, the Parties shall agree that additional payments shall be made to the Consultants in order to cover any necessary additional expenditures not envisaged in the cost estimates referred to in Clause GC 6.1(a) above, the ceiling or ceilings, as the case maybe, set forth in Clause GC 6.1(b) above shall be increased by the amount or amounts, as the case may be, of any such additional payments.

6.2 Remuneration and Reimbursable Expenditures

(a) Subject to the ceilings specified in Clause GC 6.1(b) hereof, the Client shall pay to the Consultants (i) remuneration as set forth in Clause GC 6.2 (b) and (ii) reimbursable expenditures as set forth in Clause GC 6.2(c). If specified in the SC, said remuneration shall be subject to price adjustment as specified in the SC.

(b) Remuneration for the Personnel shall be determined on the basis of time actually spent by such Personnel in the performance of the Services after the date determined in accordance with Clause GC 2.3 and Clause SC 2.3 (or such other date as the Parties shall agree in writing) (including time for necessary travel via the most direct route) at the rates referred to, and subject to such additional provisions as are set forth, in the SC.

(c) Reimbursable expenditures actually and reasonably incurred by the Consultants in the performance of the Services, as specified in SC.

(d) Notwithstanding anything to the contrary stated in the GCC and SCC, it shall be mandatory to deploy the key personnel and sub-professional as per the Man Months Input specified in the Terms of Reference. Inadequate deployment of key personnel and sub-professional shall lead to deduction in the monthly payment as per following table. The key personnel and sub-professional shall be considered to be inadequately deployed if he/she is not present for at least 90% of the time stipulated in the month, as per the Man Months Input in the Terms of Reference and the Deployment Schedule proposed by the firm.

Sr. No.	**Personnel**	**% reduction in monthly payment**
	Standalone Tunnel Project	
1.	Team Leader Cum Senior Tunnel Engineer	20%
2.	Tunnel Design Expert	15%
3.	Senior Geotechnical Engineer	20%
4.	Senior Electrical & Mechanical (E&M) Expert	20%

5.	Senior Geologist	15%
6.	Highway cum Pavement Engineer	15%
7.	Quantity Surveyor/Documentation Expert	15%
8.	Contract Expert	10%
9.	Project Associate (Resident)	10%
10.	Project Associates	10%
11.	Site Engineers	10%
12.	Support Staff	5%

For avoidance of doubt, in case the Team Leader cum Senior Tunnel Engineer has not been made available for 90% of the stipulated time in the month, then only 80% of the monthly payment shall be released. In the case of Other Key Personnel, the average availability across the group shall be considered for calculation.

6.3 Currency of Payment

All payments shall be made in Indian Rupees and shall be subjected to applicable Indian laws withholding taxes if any.

6.4 Mode of Billing and Payment

Billing and payments in respect of the Services shall be made as follows:

(a) The Client shall cause to be paid to the Consultants an interest-bearing advance payment as specified in the SC, and as otherwise set forth below. The advance payment will be due after provision by the Consultants to the Client of a bank guarantee by a bank acceptable to the Client in an amount (or amounts) and in a currency (or currencies) specified in the SC, such bank guarantee (I) to remain effective until the advance payment has been fully set off as provided in the SC, and(ii)to be in the form set for thin Appendix I hereto or in such other form as the Client shall have approved in writing.

(b) As soon as practicable and not later than fifteen (15 days) after the end of each calendar month during the period of the Services, the Consultants shall submit to the Client, in duplicate, itemized statements, accompanied by copies of receipted invoices, vouchers and other appropriate supporting materials, of the amounts payable pursuant to Clauses GC6.3 and 6.4 for such month. Each monthly statement shall distinguish that portion of the total eligible costs which pertains to remuneration from that portion which pertains to reimbursable expenditures.

(c) 75% of bill raised by the Consultant shall be paid within 72 Hrs and remaining bill may be paid after due scrutiny. The Client shall cause the payment of the Consultants periodically as given in schedule of payment above within thirty (30) days after the receipt by the Client of bills with supporting documents. Only such portion of a monthly statement that is not satisfactorily supported may be withheld from payment. Should any discrepancy be found to exist between actual payment and costs authorized to be incurred by the Consultants, the Client may add or subtract the difference from any subsequent payments. Interest at the rate

specified in the SC shall become payable as from the above due date on any amount due by, but not paid on such due date.

(d) The final payment under this Clause shall be made only after the final report and a final statement, identified as such, shall have been submitted by the Consultants and approved as satisfactory by the Client. The Services shall be deemed completed and finally accepted by the Client and the final report and final statement shall be deemed approved by the Client as satisfactory ninety (90) calendar days after receipt of the final report and final statement by the Client unless the Client, within such ninety (90)-day period, gives written notice to the Consultants specifying in detail deficiencies in the Services, the final report or final statement. The Consultants shall there upon promptly make any necessary corrections, and upon completion of such corrections, the foregoing process shall be repeated. Any amount which the Client has paid or caused to be paid in accordance with this Clause in excess of the amounts actually payable in accordance with the provisions of this Contract shall be reimbursed by the Consultants to the Client within thirty, (30) days after receipt by the Consultants of notice thereof. Any such claim by the Client for reimbursement must be made within twelve (12) calendar months after receipt by the Client of a final report and a final statement approved by the Client in accordance with the above.

(e) All payments under this Contract shall be made to the account of the Consultants specified in the SC.

7. Fairness and Good Faith

7.1 Good Faith

The Parties undertake to act in good faith with respect to each other's rights under this Contract and to adopt all reasonable measures to ensure the realization of the objectives of this Contract.

7.2 Operation of the Contract

The Parties recognize that it is impractical in this Contract to provide for every contingency which may arise during the life of the Contract, and the Parties hereby agree that it is their intention that this Contract shall operate fairly as between them, and without detriment to the interest of either of them, and that, if during the term of this Contract either Party believes that this Contract is operating unfairly, the Parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with Clause GC 8 hereof.

8. Settlement of Disputes

8.1 Amicable Settlement

The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contractor the interpretation thereof.

8.2 Dispute Resolution

8.2.1 Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the "Dispute") shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure set forth in Clause 8.3.

8.2.2 The Parties agree to use their best efforts for resolving all Disputes arising under or in respect of this Agreement promptly, equitably and in good faith, and further agree to provide each other with reasonable access during normal business hours to all non – privileged records, information and data pertaining to any dispute.

8.3 Conciliation

In the event of any Dispute between the Parties, either Party may call upon [Chairman of Bangalore Development Authority] and the Chairman of the Board of Directors of the Consultant or a substitute thereof for amicable settlement, and upon such reference, the said persons shall meet no later than 10(ten) days from the date of reference to discuss and attempt to amicably resolve the Dispute. If such meeting does not take place within the 10(ten) day period or the Dispute is not amicably settled within 15(fifteen) days of the meeting or the Dispute is not resolved as evidenced by the signing of written terms of settlement within 30 (thirty) days of the notice in writing referred to in Clause 8.2.1 or such longer period as may be mutually agreed by the Parties, either Party may refer the Dispute to arbitration in accordance with the Provisions of Clause 8.4.

8.4 **(Not applicable)** Arbitration

8.4.1 Any Dispute which is not resolved amicably by conciliation, as provided in Clause 8.3, shall be finally decided by reference to arbitration by an Arbitral Tribunal appointed in accordance with Clause 8.4.2. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the "Rules"), or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996 as amended. The venue of such arbitration shall be ***** and the language of arbitration proceedings shall be English.

8.4.2 Each dispute submitted by a Party to arbitration shall be heard by a sole arbitrator to be appointed as per the procedure below

(a) Parties may agree to appoint a sole arbitrator or, failing agreement on the identity of such sole arbitrator within thirty(30) days after receipt by the other Party of the proposal of a name for such an appointment by the Party who initiated the proceedings, either Party may apply to the President, Indian Roads Congress, New Delhi for a list of not fewer than five nominees and, on receipt of such list, the Parties shall alternately strike names therefrom, and the last remaining nominee on the list shall be sole arbitrator for the matter in dispute. If the last remaining nominee has not been determined in this manner within sixty (60) days of the date of the list, the president, Indian Roads Congress, New Delhi, shall appoint, upon the request of either Party and from such list or otherwise, a sole arbitrator for the matter in dispute.

8.4.3 Substitute Arbitrator

If for any reason an arbitrator is unable to perform his function, a substitute shall be appointed in the same manner as the original arbitrator.

8.4.4 Qualifications of Arbitrator

The sole arbitrator selected pursuant to Clause 8.2.1 hereof shall be expert with extensive experience in relation to the matter in dispute.

8.4.5 The Arbitrators shall make a reasoned award (the "Award"). Any Award made in any arbitration held pursuant to this Clause 8 shall be final and biding on the Parties as from the date it is made, and the Consultant and the Authority agree and undertake to witness and certify such Award without delay.

8.4.6 The Consultant and the Authority agree that an Award may be enforced against the Consultant and/or the Authority, as the case may be, and their respective assets wherever situated.

8.4.7 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder

8.4.8 Miscellaneous

In any arbitration proceeding hereunder:

(a) Proceedings shall, unless otherwise agreed by the parties be held in Delhi.

(b) The English language shall be the official language for all purposes;

(c) The decision of sole arbitrator shall be final and binding and shall be enforceable in any court of competent jurisdiction, and the Parties hereby waive any objections to or claims of immunity in respect of such enforcement; and

(d) The schedule of Expenses and Fee payable to the Arbitrator shall be as under

Sr. No.	Particulars of Fees and Expenses	Maximum amount payable per case
1	Fee	(i) Rs. 25,000/- per day;
		(ii) 25% extra on fee at (i) above in case of fast-track procedure as per Section -29 (B) of A&C Act; Or 10% extra on fee at (i) above if award is published within 6 months from date of entering the reference by AT;
		Alternatively, the Arbitrator may opt for a lump –sum fee of Rs. 5.00 Lakh per case including counter –claims.
2	Reading charges- one Time	Rs 25,000/- per case including counter claims.

3	One –time charges for Secretarial Assistance and Incidental Charges (telephone, fax, postage etc.)	Rs. 25,000/- per case
4	One time charges for publishing/declaration of the Award	Rs. 40,000/-
5	Other expenses (As per actual against bills subject to celling given below	
(i)	Travelling expenses	Economy class (by air), First class AC (by train) and AC Car (by road)
(ii)	Lodging and Boarding	Rs. 15,000/-per day (in metro cities); or Rs. 8000 per day (in other cities); or Rs. 5,000/- per day, if any Arbitrator makes their own arrangements.
6.	Local travel	Rs. 2,000 /- per day
7	Extra charges for days other than meeting days (maximum for 2 X ½ days)	Rs. 5000 /- per ½ day for outstation Arbitrator
Note	1. Lodging boarding and travelling expenses shall be allowed only for the arbitrator who is are residing 100 kms. away from the venue of meeting,	
	2. Delhi, Mumbai, Chennai, Kolkata, Bengaluru and Hyderabad shall be considered as Metro cities.	

In exceptional cases, such as cases involving major legal implications/wider ramifications/higher financial stakes etc. a special fee structure could be fixed in consultation with the Contractor/Supervision Consultants and with the specific approval of the Bangalore Development Authority before appointment of the Arbitrator

9. Fake CV

If any case of fake/incorrect/inflated CV is found, it shall be dealt with very severely and would result in all possible penal action including blacklisting from future projects of Bangalore Development Authority. This would also apply even when the consulting firm is not successful in getting the assignment. In case CV of a person is turned out to be fake/incorrect/inflated during the assignment, the consultancy firms will have to refund the salary and perks drawnincluding interest @12% per annumin respect of the person apart from other consequences. In addition to above, 10% of the salary and perks to be refunded shall be recovered from the Firm as penalty.

II. SPECIAL CONDITIONS OF CONTRACT

Si No	GCC Clause Reference	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.	1.1 (a)	The words'' in the Government's country" are amended to read 'in INDIA"
2.	1.4	The language is English
3.	1.6.1	The Addresses are: **Client:** Address of Authority: Telephone No: Official email Id: **Authority Engineer's:** Address of Authority Engineer's: Telephone No: Official email Id:
4.	1.6.2	Notice will be deemed to be effective as follows: (a) in the case of personal delivery or registered mail, on delivery; and (b) in the case of official email, 24 hours following confirmed transmission;
5.	1.7	The Project Location is Bengaluru. Karnataka, India
6.	1.8	The Member in Charge is: The Executive Engineer, Infrastructure Division. T Chowdaiah Road, Kumar Park East, Bengaluru – 560020.
7.	1.8	The Authorised Representative are: For the Client: _____ _____ For the Consultants: _____ _____
8.	1.8	The Consultants, Sub-consultants and the Personnel shall pay the taxes, duties, fees, levies and other impositions levied under the existing, amended or enacted laws during life of this contract and the client shall perform such duties in regard to the deduction of such tax as may be lawfully imposed.
9.	2.1	The effectiveness conditions are the following from the date of execution of contract or Approval of the Contract by the client

10.	2.2	The time period shall be 2 Weeks or such other time period as the parties may agree in writing.
11.	2.3	The time period shall be 2 weeks or such other time period as the Parties may agree in writing.
12.	2.4	The time period shall be 84 months (24 month for construction period and 60 months for Maintenance period.
13.	3.4	Limitation of the Consultants' Liability towards the Client (a) Except in case of gross negligence or wilful misconduct on the part of the Consultants or on the part of any person or firm acting on behalf of the Consultants in carrying out the Services, the Consultants, with respect to damage caused by the Consultants to the Client's property, shall not be liable to the Client: (i) for any indirect or consequential loss or damage; and (ii) Consultant will maintain at its expenses; Professional Liability Insurance including coverage for errors and omissions caused by Consultant's negligence in the performance of its duties under this agreement, (A)For the amount not exceeding total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder OR (B) the proceeds, the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of (A) or (B) is higher. (iii) The policy should be issued only from an Insurance Company operating in India. (iv) The policy must clearly indicate the limit of indemnity in terms of "Any One Accident" (AOA) and "Aggregate limit on the policy period" (AOP) and in no case should be for an amount less than stated in the contract. (v) If the Consultant enters into an agreement with Employer in a joint venture or 'in association', the policy must be procured and provided to Employer by the joint venture/in association entity and not by the individual partners of the joint venture/association. (vi) The contract may include a provision thereby the Consultant does not cancel the policy midterm without the consent of the Employer. The insurance company may provide an undertaking in this regard.

		(b) This limitation of liability shall not affect the Consultants' liability, if any, for damage to Third Parties caused by the Consultants or any person or firm acting on behalf of the Consultants in carrying out the Services. (c) Professional Liability Insurance may be accepted for initially one year which shall be extended annually for five years. PLI shall be uniformly taken for a period of five years.
14.	3.5	The risks and the coverage shall be as follows (a) Third Party motor vehicle liability insurance as required under Motor Vehicles Act,1988 in respect of motor vehicles operated in India by the Consultants or their Personnel or any Sub-consultants or their Personnel for the period of consultancy. (b) Third Party liability insurance with a minimum coverage as per prevailing marketing partices for the period of consultancy. (c) Professional liability insurance as per 3.4 (a) (ii) of SC of the consultancy, with a minimum coverage equal to estimated remuneration and reimbursable. (d) Employer's liability and workers' compensation insurance in respect of the Personnel of the Consultants and of any Sub-consultant, in accordance with the relevant provisions of the Applicable Law, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate; and (e) Insurance against loss of or damage to (i) equipment purchased in whole or in part with funds provided under this Contract, (ii) the Consultants' property used in the performance of the Services, and(iii)any documents prepared by the Consultants in the performance of the Services.
15.	3.7	(c) The other actions are "(i) taking any action under a civil works contract designating the Consultants as "Authority's Engineer", for which action, pursuant to such civil works contract, the written approval of the Client as "Employer" is required".
16.	3.8	The Authority Engineer's shall submit the reports as per the Reporting formats envisaged under this tender regularly.

17.	3.9	The Consultants shall not use these documents for purposes unrelated to this Contract without the prior written approval of the Client
18.	4.6	"The person designated as Team Leader Cum Senior Tunnel Engineer in Appendix C shall serve in that capacity, as specified in Clause GC 4.6."
19.	6.1 (b)	The amount payable Indian Rupee is:
20.	6.2 (a)	"Payments for remuneration and reimbursable items made in accordance with Clause GC 6:2(a) : (i) Consultants shall be paid billing rates for services rendered by the personnel of all categories namely (i) key Personnel; (ii) sub-Professional personnel and (iii) Support staff on man-month basis. Billing rates of remaining items of the financial proposal, namely (i) transportation , (ii) Duty travel to site (iii) Office Rent, (iv) office supplies communication etc. (v) reports & document printing and (vi) survey equipment etc. shall be worked out month wise as per actual expenditure. Beginning of 13th month from the last date of submission of bid, billing rates shall be increased to cover all items of contract i.e. remuneration, vehicle hire, office rent, consumables, furniture etc. @ 5% every 12 months. However, for evaluation and award of the Bid proposals, the quoted initial rate (as applicable for first 12 months from last date of submission of bid) shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates. All payments shall be made in Indian Rupees and shall be subjected to applicable Indian laws withholding taxes if any. (ii) Remuneration paid pursuant to the rates set forth in Appendix G shall be adjusted every twelve (12) months (and, the first time, with effect for the billing rates earned in the 13th calendar month after the last date of submission of bid) by 5% every 12month for personnel. Notwithstanding any other provisions in the agreement in this regard, this provision will prevail and override any other provision to the contrary in this agreement.
21.	6.2 (b) (i)	(1) Payment of Authority Engineer shall be released on approval of the monthly reports. Report shall be approved by the Authority only if it includes all the sections prescribed in the format and submitted as per specified timelines.

		(2) Payment shall be released as per rates quoted in Appendix C3- Breakup of Local currency costs. (3) For equipment based road inspection to be conducted in O&M phase, payment shall be released as per actual use of equipment on road and rates quoted in Appendix C3- Breakup of Local currency costs. (4) If any of the report is found to be misleading or containing incorrect information as determined by the Authority, 10% of payment linked to that report shall be deducted as penalty (5) It is understood (i) that the remuneration rates shall cover(A) such salaries and allowances as the Consultants shall have agreed to pay to the Personnel as well as factors for social charges and overhead, and (B) the cost of back stopping by home office staff not included in the Personnel listed in Appendix C, and (C) the Consultants' fee; (ii) that bonuses or other means of profit-sharing shall not be allowed as an element of overhead, and (iii) that any rates specified for persons not yet appointed shall be provisional and shall be subject to revision, with the written approval of the Client, once the applicable salaries and allowances are known. (6) Remuneration for periods of less than one month shall be calculated on an hourly basis for actual time spent in the Consultants' home office and directly attributable to the Services (one hour being equivalent to 1/240th of a month) and on a calendar-day basis for time spent away from home office (one day being equivalent to 1/30th of a month)
22.	6.2 (b) (ii)	The rates for foreign and local Personnel are set forth in Appendix G
23.	6.4	(a) The following provisions shall apply to the interest-bearing advance payment and the advance payment guarantee: 1) An advance payment of 10% of the contract price in proportion to the quoted Indian currency (INR) in the bid shall be made within 60 days after receipt and verification of advance payment bank guarantee. The advance payment along with interest will be set off by the Client in equal instalments against the statements for the first 12 months

		of the Service until the advance payment has been fully set off. The advance payment shall be in Indian Rupee. 2) The bank guarantee shall be in the amount and in the currency of the advance payment. 3) Interest rate shall be 10% per annum (on outstanding amount).
24.	6.4 (c)	The interest rate is 10% per annum
25.	6.4 (e)	The Authority Engineer's Accounts details are: [Note: Insert account number, type of account and name and address of the Bank]
26.	8.2	Disputes shall be settled by arbitration in accordance with the following provisions:

IV. APPENDICES

Appendix A: Description of the Services

[Give detailed descriptions of the Services to be provided; dates for completion of various tasks, place of performance for different tasks; specific tasks to be approved by Client, etc.]

Details as per TOR

Appendix B: Reporting Requirements

[List format, frequency, contents of reports and number of copies; persons to receive them; dates of submission etc. If no reports are to be submitted, state here "Not applicable".}

Please refer TOR

Appendix C: Key Personnel and Sub-consultants

[List under: C-l Titles [and names, if already available}, detailed job descriptions and minimum qualifications. Experience of Personnel to be assigned to work in India, and staff- months for each.

C-2 Same information as C-l for Key local Personnel.

C-3 Same as C-l for Key foreign Personnel to be assigned to work outside India.

C-4 List of approved Sub-consultants [if already available]; same information with respect to their Personnel as in C-l through C-4)

Please refer TOR

Appendix D: Medical Certificate

[Show here an acceptable form of medical certificate for foreign Personnel to be stationed in India. If there is no need for a medical certificate, state here: "Not applicable. "]

The form of Medical Certificate as required under the rules of Govt. of India

Appendix E: Hours of Work for Key Personnel

The Consultants Key personnel and all other Professional / Sub Professional / Support Staff/Sub-Consultancy personnel shall work 6 days (Mondays through Saturday) every week and observe the Gazetted Holidays of Government of India as Holidays. The Consultant shall work as per the work program of the EPC Contractor. In this context in case the work plan of the Consultant needs suitable modifications, the same shall be carried out and submitted to the client for consideration. The Consultants hours of work normally shall match with that of Contractor's activities on the site. No extra remuneration shall be claimed or paid for extra hours of work required in the interest of Project completion.

In respect of foreign personnel, one day per trip as travel time from and to the country of the Government shall be allowed.

Appendix F: Duties of the Client

[List here under:

F-1 Services, facilities and property to be made available to the Consultants by the Client.

F-2 Counterpart personnel to be made available to the Consultants by the Client.]

Please refer TOR

Appendix G: Cost Estimates

List hereunder cost estimate in INR:

1. Monthly rates for local Personnel (Key Personnel and other Personnel)
2. Reimbursable/Rental/Fixed expenditures as follows:

a. Cost of local transportation.

b. Cost of other local services, rentals, utilities, etc.

Appendix H: FORM OF PERFORMANCE SECURITY

(PERFORMANCE BANK GUARANTEE)
(Clause-13 of TOR)

To

Address of Employer:

WHEREAS_____[Name and address of Consultants][1] (hereinafter called "the consultants") has undertaken, in pursuance of Contract No._____dated _____to provides the services on terms and conditions set forth in this Contract_____[Name of contract and brief description of works) (hereinafter called the "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Consultants shall furnish you with a Bank Guarantee by a recognized bank for the sum specified there in as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Consultants such a BankGuarantee;

NOW THEREOF we hereby affirm that we are the Guarantor andresponsible to you, on behalf of the Consultants up to a total of [amount of Guarantee][2]_____[in words], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of [amount of Guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Consultants before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the services to be performed there under or of any of the Contract documents which may be made between you and the Consultants shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

The liability of the Bank under this Guarantee shall not be affected by any change in the constitution of the consultants or of the Bank.

Notwithstanding anything contained herein before, our liability under this guarantee is restricted to Rs._____(Rs._____) and the guarantee shall remain valid till_____. Unless a claim or a demand in writing is made up on us on or before _____all our liability under this guarantee shall cease.

This guarantee shall be valid for a period of 80 months i.e. upto 2 months beyond the expiry of contract of 78 months.

Signature and Seal of the Guarantor _____In presence of

Name and Designation _____

_____

1.

(Name, Signature& Occupation)

Name of the Bank _____

Address 2. _____

_____

(Name &Occupation)

Date _____

[1]Give names of all partners if the Consultants is a Joint Venture.

Appendix I: Form of Bank Guarantee for Advance Payments

(Reference Clause 6.4(a) of Contract)

(To be stamped in accordance with Stamp Act, if any, of the country of issuing bank) Ref:

Bank Guarantee: _____

Date: _____

Dear Sir,

In consideration of M/s._____(herein after referred as the "Client", which expression shall, unless repugnant to the context or meaning there of include it successors, administrators and assigns) having awarded to M/s._____(herein after referred to as the "Consultant" which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a contract by issue of client's Contract Agreement No. _____dated _____and the same having been unequivocally accepted by the Consultant, resulting in a Contract valued at_____.

For Contract (hereinafter called the "Contract") (scope of work) and the Client having agreed to make an advance payment to the Consultant for performance of the above Contract amounting to (in words and figures) as an advance against Bank Guarantee to be furnished by the Consultant.

We _____(Name of the Bank) having its Head Office at_____(herein after referred to as the Bank), which expressions hall, unless repugnant to the context or meaning thereof, include it successors, administrators executors and assigns) do hereby guarantee and undertake to pay the client immediately on demand any or, all monies payable by the Consultant to the extent of _____as aforesaid at any time upto_____@_____without any demur, reservation, contest, recourse or protest and/or without any reference to the consultant. Any such demand made by the client on the Bank shall be conclusive and binding notwithstanding any difference between the Client and the Consultant or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We agree that the Guarantee herein contained shall be irrevocable and shall continue to be enforceable till the Client discharges this guarantee.

The Client shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee, from time to time to vary the advance or to extend the time for performance of the contract by the Consultant. The Client shall have the fullest liberty without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Client and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any covenants, contained or implied, in the Contract between the Client and the Consultant other course or remedy or security available to the Client. The bank shall not be relieved of its obligations under these presents by any exercise by the Client of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Client or any other Indulgence shown by

the Client or by any other matter or thing whatsoever which under law would but for this provision have the effect of relieving the Bank.

The Bank also agrees that the Client at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Consultant and notwithstanding any security or other guarantee that the Client may have in relation to the Consultant's liabilities.

Notwithstanding anything contained herein above our liability under this guarantee is limited to _____and it shall remain in force upto and including _____And shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s. _____on whose behalf this guarantee has been given.

Dated this _____day of_____200_____at_____

WITNESS

_____
(signature)

_____
(Signature)

_____ _____
(Name)
(Name)

_____

_____
(Official Address)
_____

Designation(with Bank stamp)

Attorney as per Power of Attorney No.

_____
Dated Strike out, whichever is not applicable. _____

Note1: The stamp papers of appropriate value shall be purchased in the name of bank Who issues the "Bank Guarantee".

Note 2: The bank guarantee shall be from a Nationalized Indian Bank or reputed foreign commercial Bank acceptable to client for Foreign Consultant with counter guarantee from Nationalized Bank. Bank guarantee furnished by Foreign Consultant shall be confirmed by any Nationalized Bank in India.

Appendix J

Letter of invitation

Appendix K

Letter of Award

Appendix L

Minutes of pre-bid meeting

Appendix-M **(Deleted)**

Memorandum of Understanding between

_____

And

_____

Whereas the Bangalore Development Authority/ Ministry of Road Transport & Highways (MoRT&H)/..... State PWD (the 'Employer') has invited proposal for appointment of Authority's Engineer for _____ (Name of project) hereinafter called the Project.

And Whereas _____ (Lead Partner) and _____ JV partner/s have agreed to form a Joint Venture to provide the said services to the Employer as Authority's Engineer; and

Now, therefore, it is hereby agreed by and on behalf of the partners as follows:

(i) _____ will be the lead partner and _____ will be the other JV partner/s.

(ii)_____ (lead partner) shall be the incharge of overall administration of contract and shall be authorised representative of all JV partners for conducting all business for and on behalf of the JV during the bidding process and subsequently, represent the joint venture for and on behalf of the JV for all contractual matters for dealing with the Employer/EPC Contractor if Consultancy work is awarded to JV.

(iii) All JV partners do hereby undertake to be jointly and severely responsible for all the obligation and liabilities relating to the consultancy work and in accordance with the Terms of Reference of the Request for Proposal for the Consultancy Services.

(iv) Subsequently, if the JV is selected to provide the desired consultancy services, a detailed MOU indicating the specific project inputs and role of each partner/s along with percentage sharing of cost of services shall be submitted to the Employer (Consultant may submit the detailed MOU along with percentage sharing of cost at the time of bidding also).

For_____ (Name of Lead partner)

_____

Managing Director/Head of the Firm

Address

For_____ (Name of JV partner/s)

_____

Managing Director/Head of the Firm

Address For_____ (Name of Associate Partner/s)

DISCLAIMER

The Applicant must read all the instructions in the RFP and submit the same accordingly.